

CHAPTER 6

Researching Your Subject

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Understanding the Research Process

In most cases, whether you are conducting academic research or workplace research, your main goal is to answer a question.

In *academic research*, your goal is to find information that will help answer a scholarly question: “To what extent do standardized tests contribute to the success of public elementary schools?” or “What effects do violent media have on teenagers?” Academic research questions are often more abstract than applied. That is, they seek information regarding the principles underlying a phenomenon. Academic research usually requires extensive secondary research: reading scholarly literature in academic journals and books. If you do primary research, as scientists do in labs, you do so only after you have conducted extensive secondary research.

In *workplace research*, your goal is to find information to help you answer a practical question: “Should we replace our sales staff’s notebook computers with tablets?” or “What would be the advantages and disadvantages to our company of adopting a European-style privacy policy for customer information?” Workplace research questions frequently focus on improving a situation at a particular organization. These questions call for considerable primary research because they require you to learn about your own organization’s processes and how the people in your organization would respond to your ideas. Sometimes, workplace research questions address the needs of customers or other stakeholders. You will need a thorough understanding of your organization’s external community in order to effectively align your products or services with their needs.

Regardless of whether you are conducting academic or workplace research, the basic research methods — primary and secondary research — are fundamentally the same, as is the goal: to find answers to your questions effectively and efficiently. The Guidelines box below provides an overview of planning for the research process, and the Guidelines box on [page 119](#) reviews important points to consider while conducting research. Remember that you might also need to perform additional research as you draft, revise, edit, and proofread the technical communication that results from your research. Whenever you need additional information to help you make your argument clear and persuasive, do more research.

GUIDELINES: Planning for the Research Process

These eight steps can help you develop a research plan.

- ▶ **Analyze your audience.** Who are your most important readers? What are their personal characteristics, their attitudes toward your subject, their motivations for reading? If you are writing to an expert audience that might be skeptical about your message, you need to do a lot of research to gather the evidence for a convincing argument. See [Ch. 5](#).
- ▶ **Analyze your purpose.** Why are you writing? Understanding your purpose helps you understand the types of information readers will expect. Think in terms of what you want your readers to know or believe or do after they finish reading your document. See [Ch. 5](#).
- ▶ **Analyze your subject.** What do you already know about your subject? What do you still need to find out? Using techniques such as freewriting and brainstorming, you can determine those aspects of the subject you need to investigate. See [Ch. 3](#).
- ▶ **Consider the document type.** What application will you need to deliver: a proposal, a report, a website? What kind of oral presentation will you need to deliver? See [Ch. 3](#).
- ▶ **Work out a schedule and a budget for the project.** When is the document due? Do you have a budget for phone calls, database searches, or travel to libraries or other sites? See [Ch. 3](#).
- ▶ **Determine what information will need to be part of the document.** Draft an outline of the contents, focusing on the kinds of information that readers will expect to see in each part. See [Ch. 3](#).
- ▶ **Determine what information you still need to acquire.** Make a list of the pieces of information you don’t yet have.
- ▶ **Create questions you need to answer in your document.** Writing the questions in a list forces you to think carefully about your topic. One question suggests another, and soon you have a lengthy list that you need to answer.

GUIDELINES: Researching a Topic

Follow these seven guidelines as you gather information to use in your document.

- ▶ **Conduct secondary research.** Study journal articles and web-based sources such as online journals, discussion forums, blogs, and podcasts.
- ▶ **Conduct primary research.** You can answer some of your questions by consulting company records, by interviewing experts in your organization, by distributing questionnaires, and by interviewing other people in the industry. Other questions call for using social media to gather information from your customers, suppliers, and other stakeholders.
- ▶ **Be persistent.** Don't be discouraged if a research method doesn't yield useful information. Even experienced researchers fail at least as often as they succeed. Be prepared to rethink how you might find the information. Don't hesitate to ask reference librarians for help or to post questions on discussion forums.
- ▶ **Evaluate your information.** Once you have your information, you need to evaluate its quality: is it accurate, comprehensive, unbiased, and current?

For more about evaluating information, see [pp. 129–30](#).

- ▶ **Record your data carefully.** Prepare the materials you will need. Write information down, on paper or electronically. Record interviews (with the respondents' permission). Paste the URLs of the sites you visit into your notes. Bookmark sites so that you can return to them easily.
- ▶ **Triangulate your research methods.** *Triangulating* your research methods means using more than one or two methods. If a manufacturer's website says a printer produces 17 pages per minute, an independent review in a reputable journal also says 17, and you get 17 in a demo at your office with your documents, the printer probably will produce 17 pages per minute. When you need to answer important questions, don't settle for only one or two sources.
- ▶ **Do more research.** If the information you have acquired doesn't sufficiently answer your questions, do more research. And if you have thought of additional questions that need to be answered, do more research. When do you stop doing research? You stop only when you think you have enough high-quality information to create your document.

Choosing Appropriate Research Methods

Different research questions require different research methods. Once you have determined the questions you need to answer, think about the various research techniques you could use to answer them.

For example, your research methods for finding out how a current situation is expected to change would differ from your research methods for finding out how well a product might work for your organization. That is, if you want to know how outsourcing will change the computer-support industry over the next 10 to 20 years, you might search for long-range predictions in journal and magazine articles and on reputable websites and blogs. By contrast, if you want to figure out whether a specific scanner will produce the quality of scan that you need and will function reliably, you might do the same kind of secondary research and then observe the operation of the scanner at a vendor's site, schedule product demos at your site, follow up by interviewing others in your company, and perform an experiment in which you try two different scanners and analyze the results.

[Table 6.1](#) provides a good starting point for thinking about how to acquire the information you need. You are likely to find that your research plan changes as you conduct your research. You might find, for instance, that you need more than one method to get the information you need or that the one method you thought would work doesn't. Still, having a plan can help you discover the most appropriate methods more quickly and efficiently.

TABLE 6.1 Research Questions and Methods

TYPE OF QUESTION	EXAMPLE OF QUESTION	APPROPRIATE RESEARCH TECHNIQUE
What is the theory behind this process or technique?	How do greenhouse gases contribute to global warming?	Encyclopedias, handbooks, and journal articles present theory. Also, you can find theoretical information on websites of reputable professional organizations and universities. Search using keywords such as "greenhouse gases" and "global warming."
What is the history of this phenomenon?	When and how did engineers first try to extract shale oil?	Encyclopedias and handbooks present history. Also, you can find historical information on websites of reputable professional organizations and universities. Search using keywords such as "shale oil" and "petroleum history."
What techniques are being used now to solve this problem?	How are companies responding to the federal government's laws on health-insurance portability?	If you need recent information, you will have better luck using digital resources such as websites and social media than using traditional print media. Search using keywords and tags such as "health-insurance portability." Your search will be most effective if you use standard terminology, such as "HIPAA" for the health-insurance law.
How is a current situation expected to change?	What changes will outsourcing cause in the computer-support industry over the next 10 to 20 years?	For long-range predictions, you can find information in journal articles and magazine articles and on reputable websites . Experts might write forecasts on discussion forums and blogs .
What products are available to perform a task or provide a service?	Which vendors are available to upgrade and maintain our company's website?	For products and services, search websites, discussion forums, and blogs . Reputable vendors — manufacturers and service providers — have sites describing their offerings. But be careful not to assume vendors' claims are accurate. Even the specifications they provide might be exaggerated.
What are the strengths and weaknesses of competing products and services?	Which portable GPS system is the lightest?	Search for benchmarking articles from experts in the field, such as a journal article (either in print or on the web) about camping and outfitting that compares the available GPS systems according to reasonable criteria. Also check discussion forums for reviews and blogs for opinions. If appropriate, do field research to answer your questions.
Which product or service do experts	Which four-wheel-drive SUV offers the best combination of features and quality for our	Experts write journal articles, magazine articles, and sometimes blogs . Often, they participate in discussion forums . Sometimes, you can interview them, in person or on

recommend?	needs?	the phone, or write them inquiries .
What do our stakeholders think about a current or proposed product or service?	Would the public like to see us add a plug-in hybrid version to our line of small SUVs? How would we market it to distinguish it from the existing hybrid small SUVs?	Study journal and magazine articles or influential blogs or post a question on a company blog or on a microblogging site such as Tumblr and ask for responses. Also consider analyzing social-media data, using software to capture and measure keywords from social-media platforms.
What are the facts about how we do our jobs at this company?	Do our chemists use gas chromatography in their analyses?	Sometimes, you can interview someone, in person or on the phone, to answer a simple question. To determine whether your chemists use a particular technique, start by asking someone in the relevant department.
What can we learn about what caused a problem in our organization?	What caused the contamination in the clean room?	You can interview personnel who were closest to the problem and inspect the scene to determine the cause of the problem.
What do our personnel think we should do about a situation?	Do our quality-control analysts think we need to revise our sampling quotient?	If there are only a few personnel, interview them. If there are many, use questionnaires to get the information more quickly.
How well would this product or service work in our organization?	Would this scanner produce the quality of scan that we need and interface well with our computer equipment?	Read product reviews on reputable websites . Study discussion forums . Observe the use of the product or service at a vendor's site. Schedule product demos at your site. Follow up by interviewing others in your company to get their thinking. Do an experiment in which you try two different solutions to a problem and then analyze the results.

If you are doing research for a document that will be read by people from other cultures, think about what kinds of evidence your readers will consider appropriate. In many non-Western cultures, tradition or the authority of the person making the claim can be extremely important, in some cases more important than the kind of scientific evidence that is favored in Western cultures.

And don't forget that all people pay particular attention to information that comes from their own culture. If you are writing to European readers about telemedicine, for instance, try to find information from European authorities and about European telemedicine. This information will interest your readers and will likely reflect their cultural values and expectations.

Conducting Secondary Research

When you conduct secondary research, you are trying to learn what experts have to say about a topic. Whether an expert is a world-famous scientist revising an earlier computer model about the effects of climate change on agriculture in Europe or the head of your human-resources department checking company records to see how a new health-care law changed the way your company hired part-time workers last year, your goal is the same: to acquire the best available information — the most accurate, most unbiased, most comprehensive, and most current.

Sometimes you will do research in a library, particularly if you need specialized handbooks or access to online subscription services that are not freely available on the Internet. Sometimes you will do your research on the web. As a working professional, you might find much of the information you need in your organization's information center. An *information center* is an organization's library, a resource that collects different kinds of information critical to the organization's operations. Many large organizations have specialists who can answer research questions or who can get articles or other kinds of data for you.

UNDERSTANDING RESEARCH TOOLS

Most technical information — whether it exists in print or electronic form or both — can be tracked down using search tools available in your library, many of which are also available on your personal computer.

- **Library catalogs.** A library's catalog contains electronic records of its physical holdings — all of the books, journals, reports, and other print documents the library contains, as well as its nonprint materials such as audio and video recordings. To search for an item, consult the catalog's instructions, which explain how to limit your search by characteristics such as types of media, date of publication, and language. The instructions also explain how to use punctuation and words such as *and*, *or*, and *not* to focus your search effectively.
- **Online databases.** Most libraries subscribe to services, such as LexisNexis, ProQuest, InfoTrac, Gale Virtual Reference, and ERIC, that provide access to large databases of full-text journal articles, conference proceedings, newspapers, and other documents. Some databases have a specific focus within a field or subject matter. Check with a reference librarian — either in person or through a virtual chat — for guidance on the most useful and relevant databases for your needs.
- **Newspaper and periodical indexes.** Indexes are similar to databases, but they typically contain only citation information for articles. If you locate an article title that sounds promising, you then need to track down the periodical through other means in order to access the full article. There are periodical indexes in any number of fields. The following brief list will give you a sense of the diversity of titles:

— *Applied Science & Technology Index*

— *Business Source Premier*

— *Engineering Village*

— *National Newspaper Index*

— *Readers' Guide to Periodical Literature*

- **Abstract services.** Abstract services are like indexes but also provide abstracts: brief technical summaries of the articles. In most cases, reading the abstract will enable you to decide whether to seek out the full article. Some abstract services, such as *Chemical Abstracts Service*, cover a broad field, but many are specialized rather than general. [Figure 6.1](#) on page 124 shows an abstract from *AnthroSource*, an abstract service covering anthropology journals.

For more about abstracts, see Ch. 18 p. 481.

- **Web search engines.** If you search the web effectively and efficiently, you can find reference materials such as dictionaries and encyclopedias that don't exist in print, online versions of magazines and journals, conversion calculators and other statistical software, current survey data, government documents, animations, audio and video podcasts, and many other kinds of information.
- **Reference works.** Reference works include general dictionaries and encyclopedias, biographical dictionaries, almanacs, atlases, and dozens of other research tools. These print and online works are especially useful when you are beginning a research project because they provide an overview of the subject and often list the major works in the field.

PLOT AND IRONY IN CHILDBIRTH NARRATIVES OF MIDDLE-CLASS BRAZILIAN WOMEN

Brazil's rate of cesarean deliveries is among the highest in the world and constitutes the majority of childbirths in private hospitals. This study examines ways middle-class Brazilian women are exercising agency in this context. It draws from sociolinguistics to examine narrative structure and dramatic properties of 120 childbirth narratives of 68 low- to high-income women. Surgical delivery constituted 62% of the total. I focus on 20 young middle-class women, of whom 17 had C-sections. Doctors determined mode of childbirth pre-emptively or appeared to accommodate women's wishes, while framing the scenario as necessitating surgical delivery. The women strove to imbue C-section deliveries with value and meaning through staging, filming, familial presence, attempting induced labor, or humanized childbirth. Their stories indicate that class privilege does not lead to choice over childbirth mode. The women nonetheless struggle over the significance of their agency in childbirth.

Figure 6.1

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Source: O'Dougherty, 2013.

FIGURE 6.1 An Abstract from *AnthroSource*

TYPES OF SECONDARY RESEARCH SOURCES

Using the search tools described above, you will uncover a wide variety of information from a multitude of source types.

- **Books.** Printed (and electronic) books continue to be useful and popular. Most are edited and published by reputable organizations, some of them with a scientific or academic affiliation. Books provide in-depth background information on a wide range of subjects.
- **Periodicals: journals and magazines.** Usually published weekly, monthly, or quarterly, periodicals typically focus on a specific subject area and provide recent findings on a variety of issues. Journals tend to be more scholarly and scientific, and their articles are often reviewed by experts in the field; magazines are intended for a more general audience. Many periodicals are available in both print and digital formats.
- **Newspapers and online news sources.** Three of the most important indexed U.S. newspapers are the following:
 - the *New York Times*, perhaps the most reputable U.S. newspaper for national and international news
 - the *Christian Science Monitor*, another highly regarded general newspaper
 - the *Wall Street Journal*, the most authoritative news source on business, finance, and the economy

Many newspapers available on the web can be searched electronically, although sometimes there is a charge for archived articles. In addition, important news sites such as CNN.com have become reliable sources for breaking news.

- **Government documents.** The U.S. government is the world's biggest publisher. In researching any field of science, engineering, or business, you are likely to find that a federal agency or department has produced a relevant brochure, report, or book.

Government publications are cataloged and shelved separately from other kinds of materials. They are classified according to the Superintendent of Documents system, not the Library of Congress system. A reference librarian or a government documents specialist at your library can help you use government publications. You can also access various government sites and databases on the Internet. For example, if your company wishes to respond to a request for proposals (RFP) published by a federal government agency, you will find that RFP on a government site. The major entry point for federal government sites is USA.gov, which links to hundreds of millions of pages of government information and services. It also features tutorials, a topical index, online transactions, and links to state and local government sites.

For more about RFPs, see Ch. 16 p. 425.

- **Websites and social media.** Web searches can yield many sources that exist only on the Internet, from company-sponsored sites to online archives. Social-media sources include discussion forums, blogs, and wikis. Because social-media sites typically provide user-generated content, they must be used with caution, as detailed in the next section.

USING SOCIAL MEDIA AND OTHER INTERACTIVE RESOURCES

Social media and other interactive resources enable people to collaborate, share, link, and generate content in

ways that traditional websites offering static content cannot. However, the ease and speed with which new content can be posted, as well as the lack of formal review of the content, creates challenges for online researchers. Everyone using social-media resources must be extra cautious in evaluating and documenting sources.



To watch a tutorial on using online tools to organize your research, see the additional resources in LaunchPad.

This discussion covers three categories of social-media and web-based resources used by researchers — discussion forums, wikis, and blogs — as well as two techniques for streamlining the process of using these resources: tagged content and RSS feeds.

Discussion Forums Online discussion forums sponsored by professional organizations, private companies, and others enable researchers to tap a community's information. Discussion forums are especially useful for presenting quick, practical advice. However, the advice might or might not be authoritative, so it should be checked against other sources whenever possible.

Wikis A wiki is a website that makes it easy for members of a community, company, or organization to create and edit content collaboratively. Often, a wiki contains articles, information about student and professional conferences, reading lists, annotated sets of links, book reviews, and documents used by members of the community. You might have participated in creating and maintaining a wiki in one of your courses or as a member of a community group outside of your college.

Wikis are popular with researchers because they contain information that can change from day to day, on topics in fields such as medicine or business. As members make changes to the content, the wiki keeps track of who made the changes and when they were made. In addition, because wikis rely on information contributed voluntarily by members of a community, they represent a much broader spectrum of viewpoints than media that publish only information that has been approved by editors. For this reason, however, you should be especially careful when you use wikis; the information they contain might not be trustworthy. It's a good idea to corroborate any information you find on a wiki by consulting other sources. To find a wiki in your subject area, use a specialized search engine such as wiki.com.

Blogs Many technical and scientific organizations, universities, and private companies sponsor blogs that offer useful information for researchers.

For more about blogs, see Ch. 14, p. 381.

Keep in mind that bloggers are not always independent voices. A Hewlett-Packard employee writing on a company-sponsored blog will likely be presenting the company's viewpoint on the topic. Don't count on that blogger to offer objective views about products. Blogs sponsored by government and nonprofit agencies are more likely to be trustworthy.

Tagged Content Tags are descriptive keywords people use to categorize and label content such as blog entries, videos, podcasts, and images they post to the Internet or bookmarks they post to social-bookmarking sites. Tags can be one-word descriptors without spaces or punctuation (such as "sandiegozoo") or multiword descriptors (such as "San Diego Zoo"). Many social-media platforms have adopted the hashtag (#) as a way to tag an item to make it easier to find by searching.

[Figure 6.2](#) shows search results for blogs tagged with "driverless cars" on Smashfuse, a search engine that tracks social-media sites.

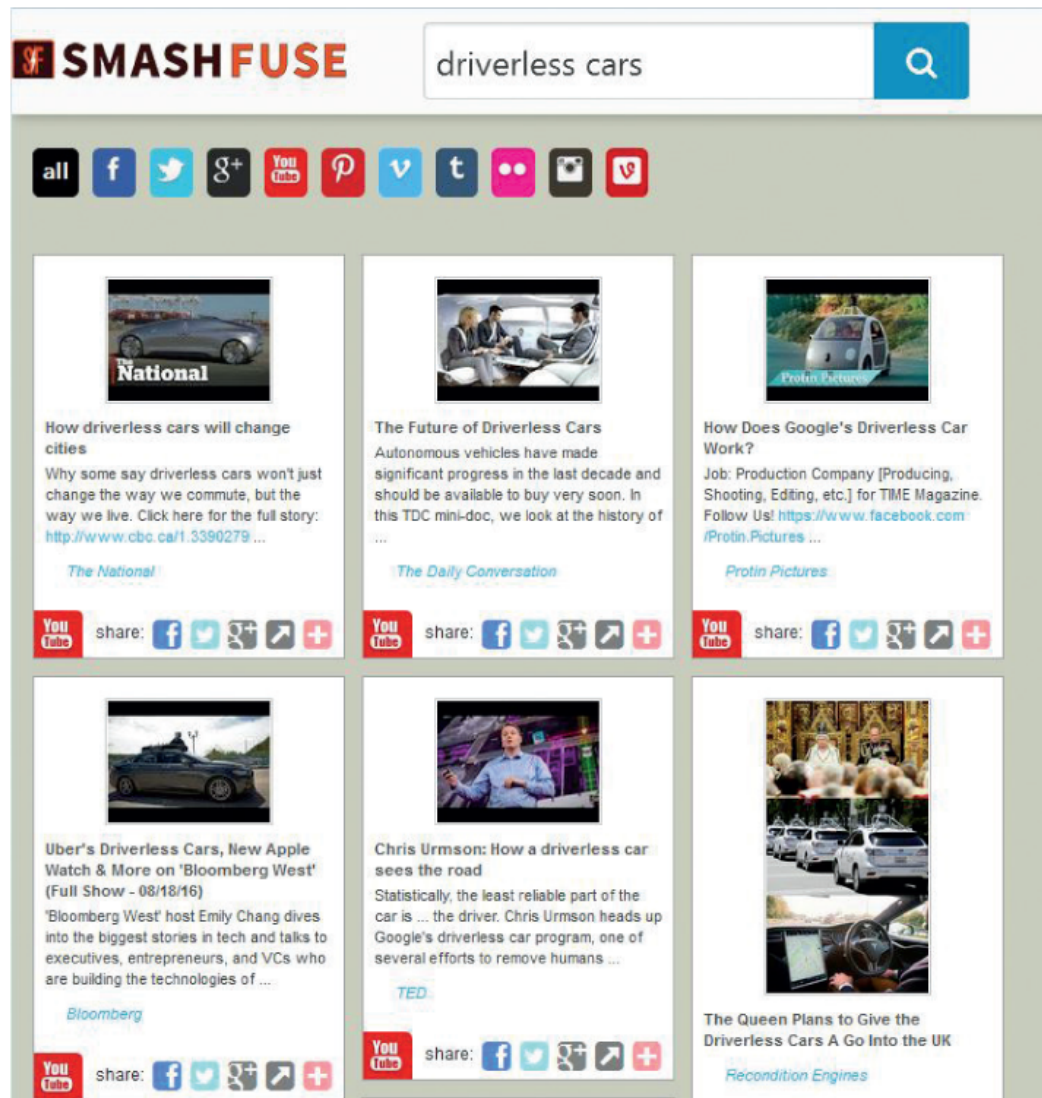


Figure 6.2

Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
Information from Smashfuse, 2016: <http://smashfuse.com/>.

FIGURE 6.2 Search Results for Blogs Tagged with “Driverless Cars”

This search returned numerous blogs that relate to the topic of driverless cars. You could also search for individual posts about the topic on other social media and get even more results.

RSS Feeds Repeatedly checking for new content on many different websites can be a time-consuming and haphazard way to research a topic. *RSS* (short for *rich site summary* or *really simple syndication*) *technology* allows readers to check just one place (such as a software program running on their computer or an email program) for alerts to new content posted on selected websites. [Figure 6.3](#) on page 128 shows a website that offers RSS feeds. Readers use a special type of software program called an *RSS aggregator* to be alerted by *RSS feeds* (notifications of new or changed content from sites of interest to them). With RSS feeds, the information comes to you; you don’t have to search for it.

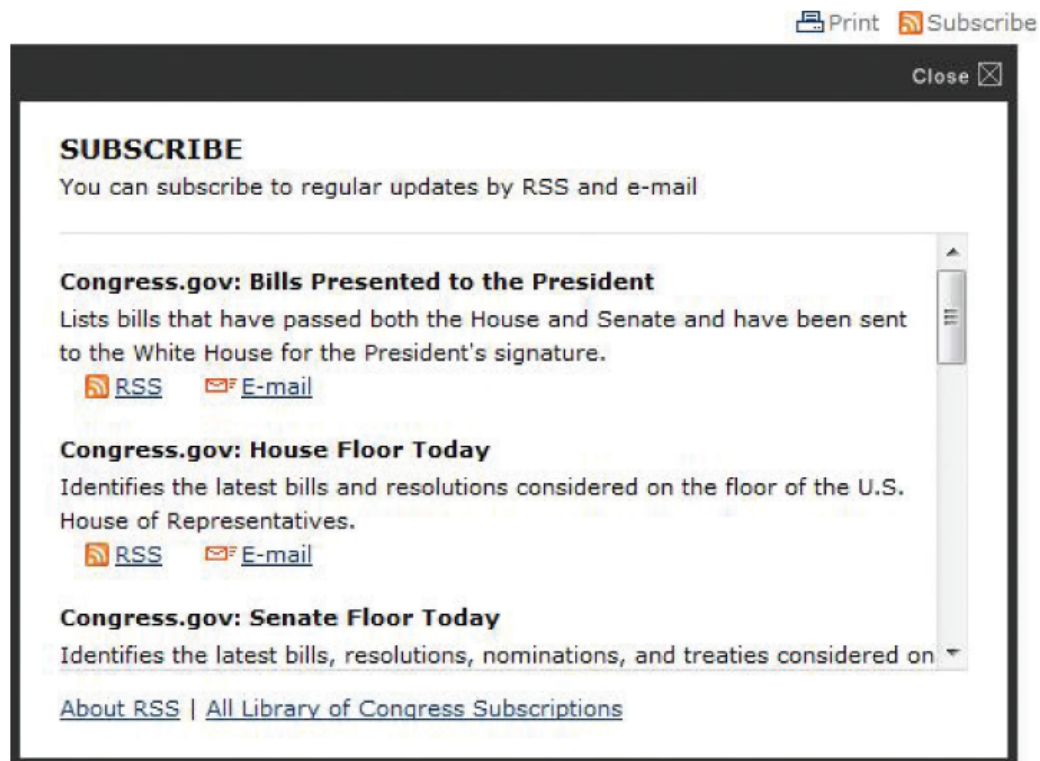


Figure 6.3
Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
Information from Congress.gov, 2016: www.congress.gov.

FIGURE 6.3 A Website Offering RSS Feeds

This pop-up menu is from a Congressional website that offers RSS subscriptions. The orange feed icon is used on many websites to indicate RSS.

TECH TIP

Why To Use Social Media in Research

Social media such as discussion forums, wikis, and blogs can provide up-to-the-minute content and collaboration opportunities for researchers. Discussion forums can offer quick, practical advice on specific issues; wikis are typically created by community volunteers who have the latest information in their field; and blogs can be found on a wide range of topics. In all three cases, however, the information provided is not necessarily authoritative or unbiased, so it should be corroborated by other sources whenever possible. Finally, consider fulfilling your ethical obligation of generosity by contributing your own expertise and findings on social-media sites to benefit others in your company or field.

How To Use Social Media in Research

Discussion Forum

Use a search engine to find a discussion forum thread. Then search within a forum for a specific subject, or post your own question to the forum.



Information from Petroleum Equipment Forum, 2016: www.pei.org/forum/viewtopic.php?f=13&t=4371.

Government-Sponsored Blog

Search for and within government-sponsored blogs to find authoritative information in a range of subject areas such as climate, economics, and immigration.



Information from NASA, 2013: <http://climate.nasa.gov/blog/938>. Illustration reprinted by permission of John Cook.

Wiki

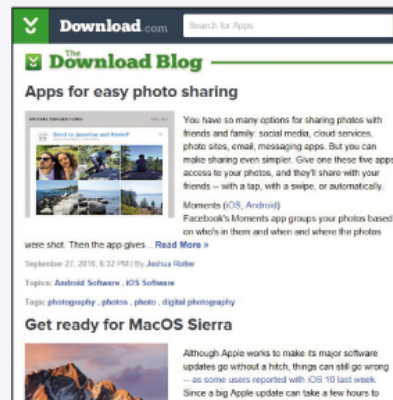
Search wiki.com or other search engines to find specialized wikis on your topic. Then search the wiki to find specific information.



Information from Appropedia.org, 2016: www.appropedia.org/Wind_power.

Company-Sponsored Blog

Search blogs sponsored by private organizations to get helpful information, product reviews, and opinions, but watch for author bias.



Information from cnet.com, 2016: <http://download.cnet.com/blog/download-blog/>.

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EVALUATING THE INFORMATION

You've taken notes, paraphrased, and quoted from your secondary research. Now, with more information than you can possibly use, you try to figure out what it all means. You realize that you still have some questions — that some of the information is incomplete, some contradictory, and some unclear. There is no shortage of information; the challenge is to find information that is accurate, unbiased, comprehensive, appropriately technical, current, and clear.

For more about taking notes, paraphrasing, and quoting, see [Appendix, Part A](#).

- **Accurate.** Suppose you are researching whether your company should consider flextime scheduling. If your research returns conflicting results, you will want to find additional sources on the subject, to help you make a decision.
- **Unbiased.** You want sources that have no financial stake in your project. A private company that transports workers in vans is likely to be a biased source because it could profit from flextime, making extra trips to bring employees to work at different times.

- **Comprehensive.** You want information from different kinds of people — in terms of gender, cultural characteristics, and age — and from people representing all viewpoints on the topic.
- **Appropriately technical.** Good information is sufficiently detailed to respond to the needs of your readers, but not so detailed that they cannot understand it or do not need it. For the flextime study, you need to find out whether opening your building an hour earlier and closing it an hour later would significantly affect your utility costs. You can get this information by interviewing people in the Operations Department; you do not need to do a detailed inspection of all the utility records of the company.
- **Current.** If your information is 10 years old, it might not accurately reflect today's situation.
- **Clear.** You want information that is easy to understand. Otherwise, you'll waste time figuring it out, and you might misinterpret it.

The most difficult kind of material to evaluate is user-generated content from the Internet — such as information on discussion forums or in blogs — because it rarely undergoes the formal review procedure used for books and professional journals. A general principle for using any information you find on the Internet is to be extremely careful. Because content is unlikely to have been reviewed before being published on a social-media site, use one or more trusted sources to confirm the information you locate. Some instructors do not allow their students to use blogs or wikis for their research. Check with your instructor to learn his or her policies.

GUIDELINES: Evaluating Print and Online Sources

FOR PRINTED SOURCES

► Authorship

Do you recognize the name of the author? Does the source describe the author's credentials and current position? If not, can you find this information in a "who's who" or by searching for other books or other journal articles by the author?

► Publisher

What is the publisher's reputation? A reliable book is published by a reputable trade, academic, or scholarly publisher; a reliable journal is sponsored by a professional association or university. Are the editorial board members well known?

Trade publications — magazines about a particular industry or group — often promote the interests of that industry or group. For example, information in a trade publication for either loggers or environmentalists might be biased. If you doubt the reliability of a book or journal, ask a reference librarian or a professor.

► Knowledge of the literature

Does the author appear to be knowledgeable about the major literature on the topic? Is there a bibliography? Are there notes

FOR ONLINE SOURCES

If you do not recognize the author's name, is the site mentioned on another reputable site? Does the site contain links to other reputable sites? Does it contain biographical information — the author's current position and credentials? Can you use a search engine to find other references to the author's credentials? Be especially careful with unedited sources such as Wikipedia; some articles in it are authoritative, others are not. Be careful, too, with blogs, some of which are written by disgruntled former employees with a score to settle.

Can you determine the publisher's identity from headers or footers? Is the publisher reputable?

If the site comes from a personal account, the information it offers might be outside the author's field of expertise. Many Internet sites exist largely for public relations or advertising. For instance, websites of corporations and other organizations are unlikely to contain self-critical information. For blogs, examine the *blogroll*, a list of links to other blogs and websites. Credible blogs are likely to link to blogs already known to be credible. If a blog links only to the author's friends, blogs hosted by the same corporation, or blogs that express the same beliefs, be very cautious.

Analyze the Internet source as you would any other source. Often, references to other sources will take the form of links.

throughout the document?

► **Accuracy and verifiability of the information**

Is the information based on reasonable assumptions? Does the author clearly describe the methods and theories used in producing the information, and are they appropriate to the subject? Has the author used sound reasoning? Has the author explained the limitations of the information?

Is the site well constructed? Is the information well written? Is it based on reasonable assumptions? Are the claims supported by appropriate evidence? Has the author used sound reasoning? Has the author explained the limitations of the information? Are sources cited? Online services such as Clicky help you evaluate how active a blog is, how the blog ranks compared to other blogs, and who is citing the blog. Active, influential blogs that are frequently linked to and cited by others are more likely to contain accurate, verifiable information.

► **Timeliness**

Does the document rely on recent data? Was the document published recently?

Was the document created recently? Was it updated recently? If a site is not yet complete, be wary.

Conducting Primary Research

Although the library and the Internet offer a wealth of authoritative information, in the workplace you will often need to conduct primary research because you need new information. There are eight major categories of primary research: analysis of social-media data, observations and demonstrations, inspections, experiments, field research, interviews, inquiries, and questionnaires.

ANALYSIS OF SOCIAL-MEDIA DATA

Every hour, tens of millions of posts are made on social media. A torrent of information is continuously coming online, and many organizations are working hard to sift through it to find useful insights.

Businesses are spending the most time on social-media research, trying to figure out what customers like and dislike about their products and services, learn what they want, and reinforce brand loyalty. Take the case of Nielsen, which for fifty years has been monitoring the TV viewing habits of Americans by distributing questionnaires and attaching devices to their TVs, and then selling the data it collects to TV networks and producers, who use the information to determine how much to charge advertisers. The problem at Nielsen is that many people don't watch TV on TV or they don't watch shows when they are broadcast. Now Nielsen also uses social-media analysis: gathering data by monitoring social media to listen in on what people are saying on Twitter, Facebook, and other services about different TV programs ([DeVault, 2013](#)).

DOCUMENT ANALYSIS ACTIVITY

Evaluating Information from Internet Sources

This information appears on the website of the Corn Refiners Association. The questions below ask you to consider the guidelines for evaluating Internet sources ([pp. 130–31](#)).

1. Given the association's name and the product being discussed, what potential bias might exist on the part of the authors of this document?
2. What main point are the authors making in this passage? How do they use words with negative and positive connotations (like "hype" and "natural") to try to persuade readers of their point of view?
3. If you were considering using this source in a document you were writing, what information would you want to discover about the site and the organization that publishes it? How would you locate the information you needed?

HIGH FRUCTOSE CORN SYRUP: MYTHS VS. FACTS

You've probably seen the negative headlines about high fructose corn syrup. Have you ever wondered if the media hype is true? Here are some of the most common inaccurate statements about this misunderstood sweetener along with the actual reality.

Myth: High fructose corn syrup is not natural.

Fact: Wrong again. High fructose corn syrup is made from corn, a natural grain product, and is a natural sweetener. High fructose corn syrup contains no artificial or synthetic ingredients or color additives. It meets the U.S. Food and Drug Administration's longstanding policy regarding the use of the term "natural."

Myth: High fructose corn syrup is to blame for obesity.

Fact: Obesity is caused by consuming more calories than are expended and Type II diabetes is associated with obesity. While high fructose corn syrup contributes to calories in the diet, there is no scientific evidence that high fructose corn syrup is a unique contributor to obesity or diabetes. In fact, the U.S. Department of Agriculture data shows that consumption of high fructose corn syrup has actually been declining while obesity and diabetes rates continued to rise. Around the world, obesity levels are also rising even though HFCS consumption is limited outside of the U.S. Many other factors contribute to

rising obesity levels including changes in lifestyle, diet and exercise and are unrelated to HFCS.

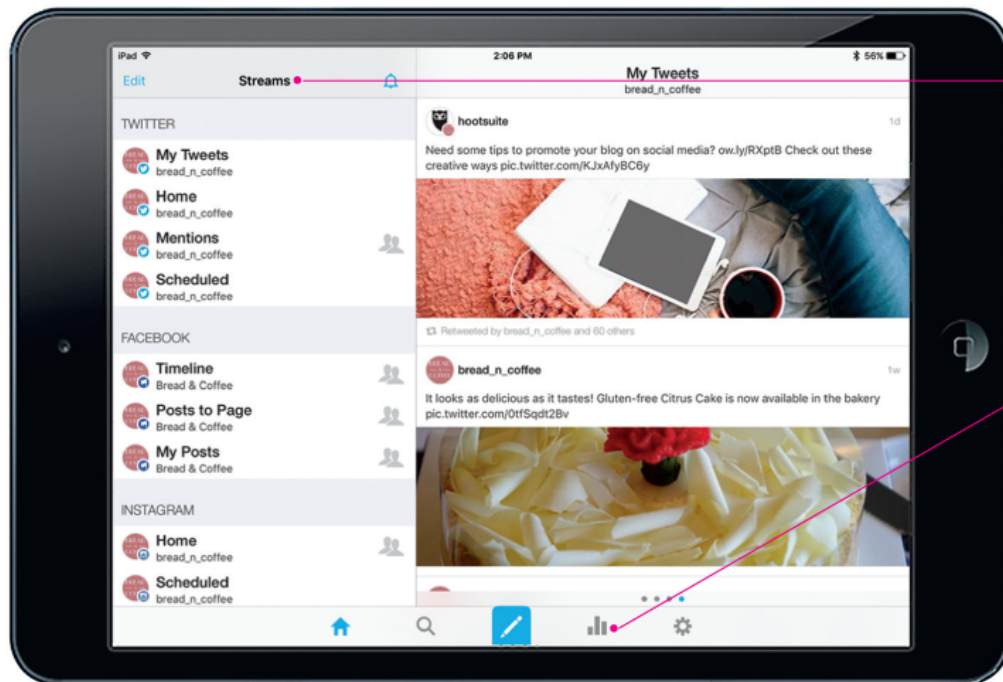
Myth: High fructose corn syrup is sweeter than sugar.

Fact: Sorry, no. High fructose corn syrup and sugar (sucrose) have almost the same level of sweetness. HFCS was made to provide the same sweetness as sugar (sucrose) so that consumers would not notice a difference in sweetness or taste. In fact, one type of HFCS commonly used in foods (HFCS-42) is actually less sweet than sugar.

Source: Corn Refiners Association, 2016.

But organizations other than businesses are analyzing social-media data, too. For instance, the U.S. Geological Survey created the Twitter Earthquake Detector (TED), a program to monitor Twitter for the use of the word *earthquake*. Why? Because they realized that when people experience earthquakes, a lot of them tweet about it. The Centers for Disease Control, a U.S. federal agency, analyzes keywords on social media to monitor the spread of diseases, such as the Zika virus, in the United States and around the world. According to one scientist, “The world is equipped with human sensors — more than 7 billion and counting. It’s by far the most extensive sensor network on the planet. What can we learn by paying attention?” ([McCaney, 2013](#)).

How do you perform social-media data analysis? There are many software programs that can help you devise searches. Among the most popular is HootSuite, which includes tools for listening in on what people are saying about your company on social media such as Twitter, Facebook, LinkedIn, and many other services. In addition, HootSuite helps you monitor and manage your company’s social-media presence and provides *analytics*: demographic data about who is following your company, their attitudes, and their behaviors. [Figure 6.4](#) shows a HootSuite dashboard, the screen that lets you view and manage all the information.



Like other similar tools for managing social media, HootSuite enables you to view all of your social media accounts from a single dashboard and post content to multiple accounts at once. Here we see a person’s Facebook, Twitter, and Instagram streams.

Clicking the analytics button provides access to tools you can use to view various metrics such as growth in numbers of followers during a specific period of time or frequency of readers’ interactions with your posts.

Figure 6.4
Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin’s
Courtesy of HootSuite.

FIGURE 6.4 A HootSuite Dashboard

OBSERVATIONS AND DEMONSTRATIONS

Observation and demonstration are two common forms of primary research. When you *observe*, you simply watch some activity to understand some aspect of it. For instance, if you were trying to determine whether the location of the break room was interfering with work on the factory floor, you could observe the situation, preferably at different times of the day and on different days of the week. If you saw workers distracted by people moving in and out of the room or by sounds made in the room, you would record your observations by taking notes, taking photos, or shooting video of events. An observation might lead to other forms of primary research. You might, for example, follow up by interviewing some employees who could

help you understand what you observed.

When you witness a *demonstration* (or *demo*), you are watching someone carry out a process. For instance, if your company was considering buying a conveyor belt sorter for its warehouse, you could arrange to visit a manufacturer's facility, where technicians would show how the sorter works. If your company was considering a portable machine, such as a laptop computer, manufacturers or dealers could demo their products at your facility.

When you plan to observe a situation or witness a demo, prepare beforehand. Write down the questions you need answered or the factors you want to investigate. Prepare interview questions in case you have a chance to speak with someone. Think about how you are going to incorporate the information you acquire into the document you will write. Finally, bring whatever equipment you will need (pen and paper, computer, camera, etc.) to the site of the observation or demo.

INSPECTIONS

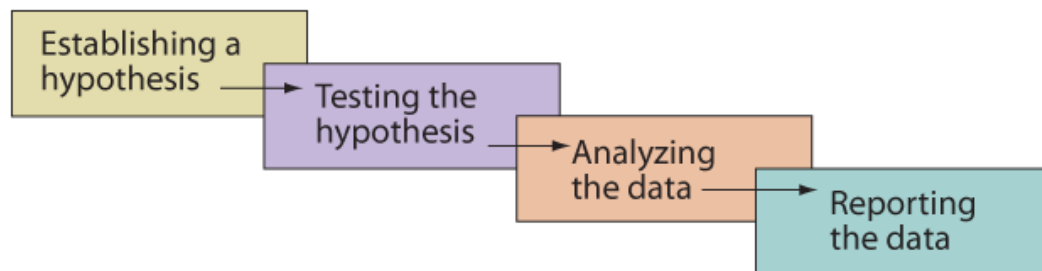
Inspections are like observations, but you participate more actively. For example, a civil engineer can determine what caused a crack in a foundation by inspecting the site: walking around, looking at the crack, photographing it and the surrounding scene, examining the soil. An accountant can determine the financial health of an organization by inspecting its financial records, perhaps performing calculations and comparing the data she finds with other data.

These professionals are applying their knowledge and professional judgment as they inspect a site, an object, or a document. Sometimes inspection techniques are more complicated. A civil engineer inspecting foundation cracking might want to test his hunches by bringing soil samples back to the lab for analysis.

When you carry out an inspection, do your homework beforehand. Think about how you will use the data in your document: will you need photographs or video files or computer data? Then prepare the materials and equipment you'll need to capture the data.

EXPERIMENTS

Learning to conduct the many kinds of experiments used in a particular field can take months or even years. This discussion is a brief introduction. In many cases, conducting an experiment involves four phases.



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- **Establishing a hypothesis.** A hypothesis is an informed guess about the relationship between two factors. In a study relating gasoline octane and miles per gallon, a hypothesis might be that a car will get 5 percent better mileage with 89-octane gas than with 87-octane gas.
- **Testing the hypothesis.** Usually, you need an experimental group and a control group. These two groups should be identical except for the condition you are studying: in the above example, the gasoline. The control group would be a car running on 87 octane. The experimental group would be an identical car running on 89 octane. The experiment would consist of driving the two cars over an identical course at the same speed — preferably in some sort of controlled environment — over a given distance, such as 1,000 miles. Then you would calculate the miles per gallon. The results would either support or refute your original hypothesis.
- **Analyzing the data.** Do your data show a correlation — one factor changing along with another — or a causal relationship? For example, we know that sports cars are involved in more fatal accidents than sedans (there is a stronger correlation for sports cars), but we don't know what the causal relationship is — whether the car or the way it is driven is the important factor.
- **Reporting the data.** When researchers report their findings, they explain what they did, why they did it, what they saw, what it means, and what ought to be done next.

For more about reports, see [Chs. 17–19](#).

FIELD RESEARCH

Whereas an experiment yields quantitative data that typically can be measured precisely, most field research

is qualitative; that is, it yields data that typically cannot be measured precisely. Often in field research, you seek to understand the quality of an experience. For instance, you might want to understand how a new seating arrangement affects group dynamics in a classroom. You could design a study in which you observed and shot video of classes and interviewed the students and the instructor about their reactions to the new arrangement. Then you could do the same in a traditional classroom and compare the results.

Some kinds of studies have both quantitative and qualitative elements. In the case of classroom seating arrangements, you could include some quantitative measures, such as the number of times students talked with one another. You could also distribute questionnaires to elicit ratings by the students and the instructor. If you used these same quantitative measures on enough classrooms, you could gather valid quantitative information.

When you are doing quantitative or qualitative research on the behavior of animals — from rats to monkeys to people — try to minimize two common problems:

- **The effect of the research on the behavior you are studying.** In studying the effects of the classroom seating arrangement, minimize the effects of your own presence. For instance, if you observe in person, avoid drawing attention to yourself. Also, make sure that the video camera is placed unobtrusively and that it is set up before the students arrive, so they don't see the process. Still, any time you bring in a camera, you cannot be sure that what you witness is typical.
- **Bias in the recording and analysis of the data.** Bias can occur because researchers want to confirm their hypotheses. In an experiment to determine whether students write differently on physical keyboards than on touch screens, a researcher might see differences where other people don't. For this reason, the experiment should be designed so that it is *double blind*. That is, the students shouldn't know what the experiment is about so that they don't change their behavior to support or negate the hypothesis, and the data being analyzed should be disguised so that researchers don't know whether they are examining the results from the control group or the experimental group. For example, the documents produced on keyboards and touch screens should be printed out the same way.

Conducting an experiment or field research is relatively simple; the hard part is designing your study so that it accurately measures what you want it to measure.

INTERVIEWS

Interviews are extremely useful when you need information on subjects that are too new to have been discussed in the professional literature or are too narrow for widespread publication (such as local political questions).

In choosing a respondent — a person to interview — answer three questions:

- **What questions do you want to answer?** Only when you know this can you begin to search for a person who can provide the information.
- **Who could provide this information?** The ideal respondent is an expert willing to talk. Unless there is an obvious choice, such as the professor carrying out the research you are studying, use directories, such as local industrial guides, to locate potential respondents. You may also be able to find experts through your social-media network.
- **Is the person willing to be interviewed?** Contact the potential respondent by phone or in writing and describe what kind of information you are seeking. If the person is not able to help you, he or she might be willing to refer you to someone who can. Explain why you have decided to ask him or her. (A compliment works better than admitting that the person you really wanted to interview is out of town.) Explain what you plan to do with the information, such as write a report or present a talk. Then, if the person is willing to be interviewed, set up an appointment at his or her convenience.

GUIDELINES: Conducting an Interview

Follow these suggestions for preparing for and conducting an interview — and for following up after the interview.

PREPARING FOR THE INTERVIEW

- ▶ **Do your homework.** If you ask questions that have already been answered in the professional literature, the respondent might become annoyed and uncooperative.

- ▶ **Prepare good questions.** Good questions are clear, focused, and open.

— **Be clear.** The respondent should be able to understand what you are asking.

UNCLEAR Why do you sell Trane products?

CLEAR What are the characteristics of Trane products that led you to include them in

your product line?

The unclear question can be answered in a number of unhelpful ways: “Because they’re too expensive to give away” or “Because I’m a Trane dealer.”

- **Be focused.** The question must be narrow enough to be answered briefly. If you want more information, you can ask a follow-up question.

UNFOCUSED What is the future of the computer industry?

FOCUSED What will the American chip industry look like in 10 years?

- **Ask open questions.** Your purpose is to get the respondent to talk. Don’t ask a lot of questions that have yes or no answers.

CLOSED Do you think the federal government should create industrial partnerships?

OPEN What are the advantages and disadvantages of the federal government’s creating industrial partnerships?

- ▶ **Check your equipment.** If you will be recording the interview, test your voice recorder or video camera to make sure it is operating properly.

BEGINNING THE INTERVIEW

- ▶ **Arrive on time.**
- ▶ **Thank the respondent for taking the time to talk with you.**
- ▶ **State the subject and purpose of the interview and what you plan to do with the information.**
- ▶ **If you wish to record the interview, ask permission.**

CONDUCTING THE INTERVIEW

- ▶ **Take notes.** Write down important concepts, facts, and numbers, but don’t take such copious notes that you can’t make eye contact with the respondent or that you are still writing when the respondent finishes an answer.
- ▶ **Start with prepared questions.** Because you are likely to be nervous at the start, you might forget important questions. Have your first few questions ready.
- ▶ **Be prepared to ask follow-up questions.** Listen carefully to the respondent’s answer and be ready to ask a follow-up question or request a clarification. Have your other prepared questions ready, but be willing to deviate from them if the respondent leads you in unexpected directions.
- ▶ **Be prepared to get the interview back on track.** Gently return to the point if the respondent begins straying unproductively, but don’t interrupt rudely or show annoyance. Do not say, “Whoa! I asked about layoffs in this company, not in the whole industry.” Rather, say, “On the question of layoffs at this company, do you anticipate ... ?”

CONCLUDING THE INTERVIEW

- ▶ **Thank the respondent.**
- ▶ **Ask for a follow-up interview.** If a second meeting would be useful, ask to arrange one.
- ▶ **Ask for permission to quote the respondent.** If you think you might want to quote the respondent by name, ask for permission now.

AFTER THE INTERVIEW

- ▶ **Write down the important information while the interview is fresh in your mind.** (This step is unnecessary, of course, if you have recorded the interview.) If you will be printing a transcript of the interview, make the transcript now.
- ▶ **Send a brief thank-you note.** Within a day or two, send a note showing that you appreciate the respondent’s courtesy and that you value what you have learned. In the note, confirm any previous offers you have made, such as to send the respondent a copy of your final document.

When you wish to present the data from an interview in a document you are preparing, include a transcript of the interview (or an excerpt from the interview). You will probably present the transcript as an appendix so that readers can refer to it but are not slowed down when reading the body of the document. You might decide to present brief excerpts from the transcript in the body of the document as evidence for points you make.

[Figure 6.5](#) is from a transcript of an interview with an attorney specializing in information technology. The interviewer is a student who is writing about legal aspects of software ownership.

Q. Why is copyright ownership important in marketing software?	
A. If you own the copyright, you can license and market the product and keep other people from doing so. It could be a matter of millions of dollars if the software is popular.	
Q. Shouldn't the programmer automatically own the copyright?	The student prompts the attorney to expand her answers.
A. If the programmer wrote the program on personal time, he or she should and does own the copyright.	
Q. So "personal time" is the critical concept?	
A. That's right. We're talking about the "work-made-for-hire" doctrine of copyright law. If I am working for you, anything I make under the terms of my employment is owned by you.	
Q. What is the complication, then? If I make the software on my machine at home, I own it; if I'm working for someone, my employer owns it.	The student responds to the attorney's answers, making the interview more of a discussion.
A. Well, the devil is in the details. Often the terms of employment are casual, or there is no written job description or contract for the particular piece of software.	
Q. Can you give me an example of that?	
A. Sure. There was a 1992 case, <i>Aymes v. Bonelli</i> . Bonelli owned a swimming pool and hired Aymes to write software to handle record keeping on the pool. This was not part of Bonelli's regular business; he just wanted a piece of software written. The terms of the employment were casual. Bonelli paid no health benefits, Aymes worked irregular hours, usually unsupervised — Bonelli wasn't a programmer. When the case was heard, the court ruled that even though Bonelli was paying Aymes, Aymes owned the copyright because of the lack of involvement and participation by Bonelli. The court found that the degree of skill required by Aymes to do the job was so great that, in effect, he was creating the software by himself, even though he was receiving compensation for it.	
Q. How can such disagreements be prevented? By working out the details ahead of time?	
A. Exactly. The employer should have the employee sign a statement that the project is being carried out as work made for hire and should register the copyright with the U.S. Copyright Office in Washington. Conversely, employees should try to have the employer sign a statement that the project is not work made for hire and should try to register the copyright themselves.	
Q. And if agreement can't be reached ahead of time?	
A. Then stop right there. Don't do any work.	

Figure 6.5
Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's

FIGURE 6.5 Excerpt from an Interview

INQUIRIES

A useful alternative to a personal interview is to send an inquiry. This inquiry can take the form of a letter, an email, or a message sent through an organization's website. If you are lucky, your respondent will provide detailed and helpful answers. However, the respondent might not clearly understand what you want to know or might choose not to help you. Although the strategy of the inquiry is essentially that of a personal interview, inquiries can be less successful because the recipient has not already agreed to provide information and might not respond. Also, an inquiry, unlike an interview, gives you little opportunity to follow up by asking for clarification.

For more about inquiry letters, see Ch. 14, [p. 371](#).

QUESTIONNAIRES

Questionnaires enable you to solicit information from a large group of people. You can send questionnaires through the mail, email them, present them as forms on a website, or use survey software (such as SurveyMonkey).

To find software for conducting surveys, search for "survey software."

Unfortunately, questionnaires rarely yield completely satisfactory results, for three reasons:

- **Some of the questions will misfire.** Respondents will misinterpret some of your questions or supply useless answers.
- **You won't obtain as many responses as you want.** The response rate will almost never exceed 50 percent. In most cases, it will be closer to 10 to 20 percent.
- **You cannot be sure the respondents are representative.** People who feel strongly about an issue are

much more likely to respond to questionnaires than are those who do not. For this reason, you need to be careful in drawing conclusions based on a small number of responses to a questionnaire.

When you send a questionnaire, you are asking the recipient to do you a favor. Your goal should be to construct questions that will elicit the information you need as simply and efficiently as possible.

Asking Effective Questions To ask effective questions, follow two suggestions:

- **Use unbiased language.** Don't ask, "Should U.S. clothing manufacturers protect themselves from unfair foreign competition?" Instead, ask, "Are you in favor of imposing tariffs on men's clothing?"
- **Be specific.** If you ask, "Do you favor improving the safety of automobiles?" only an eccentric would answer no. Instead, ask, "Do you favor requiring automobile manufacturers to equip new cars with electronic stability control, which would raise the price by an average of \$300 per car?"

[Table 6.2](#) explains common types of questions used in questionnaires.

TABLE 6.2 Common Types of Questions Used in Questionnaires

TYPE OF QUESTION	EXAMPLE	COMMENTS
Multiple choice	Would you consider joining a company-sponsored sports team? Yes ____ No ____	The respondent selects one of the alternatives.
Likert scale	The flextime program has been a success in its first year. strongly disagree ____ strongly agree	The respondent ranks the degree to which he or she agrees or disagrees with the statement. Using an even number of possible responses (six, in this case) increases your chances of obtaining useful data. With an odd number, many respondents will choose the middle response.
Semantic differential	Logging on to the system simple ____ difficult The description of the new desalinization process interesting ____ boring	The respondent registers a response along a continuum between a pair of opposing adjectives. Usually, these questions measure a person's feelings about a task, an experience, or an object. As with Likert scales, an even number of possible responses yields better data.
Ranking	Please rank the following work schedules in order of preference. Put a 1 next to the schedule you would most like to have, a 2 next to your second choice, and so on. 8:00–4:30 ____ 8:30–5:00 ____ 9:00–5:30 ____ flexible ____	The respondent indicates the priority of a number of alternatives.
Short answer	What do you feel are the major advantages of the new parts-requisitioning policy? 1. ____ 2. ____ 3. ____	The respondent writes a brief answer using phrases or sentences.
Short essay	The new parts-requisitioning policy has been	Although essay questions can

in effect for a year. How well do you think it is working?

yield information you never would have found using closed-ended questions, you will receive fewer responses to them because answering them requires more effort. Also, essays cannot be quantified precisely, as data from other types of questions can.

Include an introductory explanation with the questionnaire. This explanation should clearly indicate who you are, why you are writing, what you plan to do with the information from the questionnaire, and when you will need it.

Testing the Questionnaire Before you send out *any* questionnaire, show it and its accompanying explanation to a few people who can help you identify any problems. After you have revised the materials, test them on people whose backgrounds are similar to those of your intended respondents. Revise the materials a second time, and, if possible, test them again. Once you have sent the questionnaire, you cannot revise it and resend it to the same people.

For more about testing documents, see [Ch. 13](#).

Administering the Questionnaire Determining who should receive the questionnaire can be simple or difficult. If you want to know what the residents of a particular street think about a proposed construction project, your job is easy. But if you want to know what mechanical-engineering students in colleges across the country think about their curricula, you will need a background in sampling techniques to identify a representative sample.

Make it easy for respondents to present their information. For mailed questionnaires, include a self-addressed, stamped envelope.

[Figure 6.6](#) on page 142 shows a sample questionnaire.

Likert-scale questions 3 and 4 make it easy for the writer to quantify data about subjective impressions.

Short-answer questions 6 and 7 are best for soliciting ideas from respondents.

September 6, 2017

To: All employees
From: William Bonoff, Vice President of Operations
Subject: Evaluation of the Lunches Unlimited food service

As you may know, every two years we evaluate the quality and cost of the food service that caters our lunchroom. We would like you to help in our evaluation by sharing your opinions about the food service. Please note that your responses will remain anonymous. Please drop the completed questionnaires in the marked boxes near the main entrance to the lunchroom.

- Approximately how many days per week do you eat lunch in the lunchroom?
0 ____ 1 ____ 2 ____ 3 ____ 4 ____ 5 ____
- At approximately what time do you eat in the lunchroom?
11:30–12:30 ____ 12:00–1:00 ____ 12:30–1:30 ____ varies ____
- A clean table is usually available.
strongly disagree ____ strongly agree
- The Lunches Unlimited personnel are polite and helpful.
strongly disagree ____ strongly agree
- Please comment on the quality of the different kinds of food you have eaten in the lunchroom.
 - Daily specials
excellent ____ good ____ satisfactory ____ poor ____
 - Hot dogs and hamburgers
excellent ____ good ____ satisfactory ____ poor ____
 - Other entrées
excellent ____ good ____ satisfactory ____ poor ____
- What *foods* would you like to see served that are not served now?

- What *beverages* would you like to see served that are not served now?

- Please comment on the prices of the foods and beverages served.
 - Hot meals (daily specials): too high ____ fair ____ a bargain ____
 - Hot dogs and hamburgers: too high ____ fair ____ a bargain ____
 - Other entrées: too high ____ fair ____ a bargain ____
- Would you be willing to spend more money for a better-quality lunch if you thought the price was reasonable?
yes, often ____ sometimes ____ not likely ____
- On the other side of this sheet, please provide whatever comments you think will help us evaluate the catering service.

Thank you for your assistance.

Figure 6.6
Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's

FIGURE 6.6 Questionnaire

Presenting Questionnaire Data in Your Document To decide where and how to present the data that you acquire from your questionnaire, think about your audience and purpose. Start with this principle: important information is presented and analyzed in the body of a document, whereas less important information is presented in an appendix (a section at the end that only some of your audience will read). Most often, different versions of the same information appear in the two places.

Typically, the full questionnaire data are presented in an appendix. If you can, present the respondents' data — the answers they provided — in the questionnaire itself, as shown here:

- Approximately how many days per week do you eat lunch in the lunchroom?
0 **12** 1 **16** 2 **18** 3 **12** 4 **9** 5 **4**
- At approximately what time do you eat in the lunchroom?
11:30–12:30 **3** 12:00–1:00 **26** 12:30–1:30 **7** varies **23**

If you think your reader will benefit from analyses of the data, present such analyses. For instance, you could calculate the percentage for each response: for question 1, “12 people — 17 percent — say they do not eat in the cafeteria at all.” Or you could present the percentage in parentheses after each number: “12 (17%).”

Selected data might then be interpreted in the body of the document. For instance, you might devote a few sentences or paragraphs to the data for one of the questions. The following example shows how a writer might discuss the data from question 2.

Question 2 shows that 26 people say that they use the cafeteria between noon and 1:00. Only 10 people selected the two other times: 11:30–12:30 or 12:30–1:30. Of the 23 people who said they use the cafeteria at various times, we can conclude that at least a third — 8 people — use it between noon and 1:00. If this assumption is correct, at least 34 people (26 + 8) use the cafeteria between noon and 1:00. This would explain why people routinely cannot find a table in the noon hour, especially between 12:15 and 12:30. To alleviate this problem, we might consider asking department heads not to schedule meetings between 11:30 and 1:30, to make it easier for their people to choose one of the less-popular times.

The body of a document is also a good place to discuss important nonquantitative data. For example, you might wish to discuss and interpret several representative textual answers to open-ended questions.

ETHICS NOTE

REPORTING AND ANALYZING DATA HONESTLY

When you put a lot of time and effort into a research project, it's frustrating if you can't find the information you need or if the information you find doesn't help you say what you want to say. As discussed in [Chapter 2](#), your responsibility as a professional is to tell the truth.

If the evidence suggests that the course of action you propose won't work, don't omit that evidence or change it. Nor should you hide it in a place where readers may not see it. Rather, try to figure out why the evidence does not support your proposal. Present your explanation honestly and visibly.

If you can't find reputable evidence to support your claim that one device works better than another, don't just keep silent and hope your readers won't notice. Explain why you think the evidence is missing and how you propose to follow up by continuing your research.

If you make an honest mistake, you are a person. If you cover up a mistake, you're a dishonest person. If you get caught fudging the data, you could be an unemployed dishonest person. If you don't get caught, you're still a smaller person.

WRITER'S CHECKLIST

☐ Did you determine the questions you need to answer for your document? ([p. 117](#))

Did you plan before beginning the research process, considering the following important issues:

- ☐ audience? ([p. 118](#))
- ☐ purpose? ([p. 118](#))
- ☐ subject? ([p. 118](#))
- ☐ document type? ([p. 118](#))
- ☐ schedule and budget? ([p. 119](#))
- ☐ information needed? ([p. 119](#))

Did you choose appropriate research tools to find sources, including

- ☐ library catalogs? ([p. 122](#))
- ☐ online databases? ([p. 123](#))
- ☐ newspaper and periodical indexes? ([p. 123](#))
- ☐ abstract services? ([p. 123](#))
- ☐ web search engines? ([p. 123](#))
- ☐ reference works? ([p. 123](#))

Did you find appropriate secondary-research sources to answer your questions, including

- ☐ books? ([p. 124](#))
- ☐ journal and magazine articles? ([p. 124](#))
- ☐ newspaper and online news articles? ([p. 124](#))
- ☐ government documents? ([p. 124](#))
- ☐ websites? ([p. 125](#))
- ☐ social media? ([p. 125](#))

In evaluating information, did you carefully assess

- ☐ the author's credentials? ([p. 130](#))
- ☐ the publisher? ([p. 130](#))
- ☐ the author's knowledge of literature in the field? ([p. 130](#))
- ☐ the accuracy and verifiability of the information? ([p. 131](#))
- ☐ the timeliness of the information? ([p. 131](#))

Did you choose appropriate primary-research methods to answer your questions, including, if appropriate,

- ☐ social-media data analysis? ([p. 131](#))
- ☐ observations and demonstrations? ([p. 134](#))
- ☐ inspections? ([p. 134](#))
- ☐ experiments? ([p. 135](#))
- ☐ field research? ([p. 135](#))
- ☐ interviews? ([p. 136](#))
- ☐ inquiries? ([p. 138](#))
- ☐ questionnaires? ([p. 139](#))

☐ Did you report and analyze the data honestly? ([p. 144](#))

EXERCISES

For more about memos, see Ch. 14, [p. 376](#).

1. Imagine you are an executive working for a company that distributes books to bookstores in the Seattle, Washington, area. Your company, with a 20,000-square-foot warehouse and a fleet of 15 small delivery vans, employs 75 people. The following are three questions that an academic researcher specializing in energy issues might focus on in her research. Translate each of these academic questions into a workplace question that your company might need to answer.
 - a. What are the principal problems that need to be resolved before biomass (such as switchgrass) can become a viable energy source for cars and trucks?
 - b. How much money will need to be invested in the transmission grid before windmills can become a major part of the energy solution for business and residential customers in the western United States?
 - c. Would a federal program that enables companies to buy and sell carbon offsets help or hurt industry in the United States?
2. For each of the following questions, select a research technique that is likely to yield a useful answer. For instance, if the question is “Which companies within a 20-mile radius of our company headquarters sell recycled paper?” a search of the web is likely to provide a useful answer.
 - a. Does the Honda CR-V include traction control as a standard feature?
 - b. How much money has our company’s philanthropic foundation donated to colleges and universities in each of the last three years?
 - c. How does a 3D printer work?
 - d. Could our Building 3 support a rooftop green space?
 - e. How can we determine whether we would save more money by switching to LED lighting in our corporate offices?
3. Using a search engine, answer the following questions. Provide the URL of each site that contains information for your answer. If your instructor requests it, submit your answers in an email to him or her.
 - a. What are the three largest or most important professional organizations in your field? (For example, if you are a construction management major, your field is construction management, civil engineering, or industrial engineering.)
 - b. What are three important journals read by people in your field?
 - c. What are three important online discussion forums or bulletin boards read by people in your field?
 - d. What are the date and location of an upcoming national or international professional meeting for people in your field?
 - e. Name and describe, in one paragraph for each, three major issues being discussed by practitioners or academics in your field. For instance, nurses might be discussing the effect of managed care on the quality of medical care delivered to patients.
4. Revise the following interview questions to make them more effective. In a brief paragraph for each, explain why you have revised the question as you have.
 - a. What is the role of communication in your daily job?
 - b. Do you think it is better to relocate your warehouse or go to just-in-time manufacturing?
 - c. Isn’t it true that it’s almost impossible to train an engineer to write well?
 - d. Where are your company’s headquarters?
 - e. Is there anything else you think I should know?
5. Revise the following questions from questionnaires to make them more effective. In a brief paragraph for each, explain why you have revised the question as you have.
 - a. Does your company provide tuition reimbursement for its employees? Yes _____ No _____
 - b. What do you see as the future of bioengineering?
 - c. How satisfied are you with the computer support you receive?

d. How many employees work at your company? 5–10 ____ 10–15 ____ 15 or more ____

e. What kinds of documents do you write most often? memos ____ letters ____ reports ____

6. **TEAM EXERCISE** Form small groups, and describe and evaluate your college or university's website. A different member of the group might carry out each of the following tasks:

- In an email to the site's webmaster, ask questions about the process of creating the site. For example, how involved was the webmaster with the content and design of the site? What is the webmaster's role in maintaining the site?
- Analyze the kinds of information the site contains, and determine whether the site is intended primarily for faculty, students, alumni, legislators, or prospective students.
- Determine the overlap between information on the site and information in printed documents published by the school. In those cases in which there is overlap, is the information on the site merely a duplication of the printed information, or has it been revised to take advantage of the unique capabilities of the web?

In a memo to your instructor, present your findings and recommend ways to improve the site.

CASE 6: Revising a Questionnaire

You're a marketing director at a real-estate company. You are trying to determine whether it would be cost-effective to have the company's agents take property photos instead of having the photos taken by the professional photographers employed by the supplier with which you currently contract. You ask one of your agents to develop a questionnaire to gauge agents' reactions to and opinions about the possibility of adding photography to their responsibilities, but you find that her questionnaire needs considerable revising before it will be an effective tool. To access the questionnaire and begin assessing it, go to LaunchPad.



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CHAPTER 7

Organizing Your Information

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Understanding Three Principles for Organizing Technical Information

In organizing your information, analyze your audience and purpose, use conventional patterns of organization, and display your organizational pattern prominently.

As with any important writing task, you might want to discuss your ideas about how to organize the document with others in your network. They might identify other factors that you should consider or suggest other patterns of organization that might work better for your audience, purpose, and subject.

ANALYZING YOUR AUDIENCE AND PURPOSE

Although you thought about your audience and purpose as you planned and researched your subject, your analyses of audience and purpose are likely to change as you continue. Therefore, it is useful to review your initial assessment of audience and purpose before you proceed.

Will your audience like the message you will present? If so, announce your main point early in the document. If not, consider a pattern that presents your important evidence before your main point. Is your audience used to seeing a particular pattern in the application (the kind of document you will be writing)? If they are, you will probably want to use that pattern, unless you have a good reason to use a different one.

What is your purpose in writing the document? Do you want your audience to understand a body of information or to accept a point of view and perhaps act on it? One purpose might call for a brief report without any appendixes; the other might require a detailed report, complete with appendixes.

For more about audience and purpose, see [Ch. 5](#).

If you are addressing people from other cultures, remember that organizational patterns can vary from culture to culture. If you can, study documents written by people from the culture you are addressing to see whether they favor an organizational pattern different from the one you are considering. As you do so, ask yourself the following four questions:

- **Does the document follow expected organizational patterns?** For example, this chapter discusses the general-to-specific pattern. Does the document you are studying present the specific information first?
- **Do the introduction and conclusion present the kind of information you would expect?** In the United States, main findings are often presented in the introduction; in some other cultures, the main findings are not presented until late in the document.
- **Does the document appear to be organized linearly?** Is the main idea presented first in a topic sentence or thesis statement? Does supporting information follow? In some cultures, main ideas are withheld until the end of the paragraph or document.
- **Does the document use headings?** If so, does it use more than one level?

If documents from the culture you plan to address are organized very differently from those you're used to seeing, take extra steps to ensure that you don't distract readers by using an unfamiliar organizational pattern.

USING CONVENTIONAL PATTERNS OF ORGANIZATION

This chapter presents a number of conventional, or commonly used, patterns of organization, such as the chronological pattern and the spatial pattern. You should begin by asking yourself whether a conventional pattern for presenting your information already exists. Using a conventional pattern makes things easier for you as a writer and for your audience.

For you, a conventional pattern serves as a template or checklist, helping you remember which information to include and where to put it. In a proposal, for example, you include a budget, which you put near the end or in an appendix. For your audience, a conventional pattern makes your document easier to read and understand. Readers who are familiar with proposals can find the information they want because you have put it where others have put similar information.

Does this mean that technical communication is merely a process of filling in the blanks? No. You need to assess the writing situation continuously as you work. If you think you can communicate your ideas better by modifying a conventional pattern or by devising a new pattern, do so. However, you gain nothing if an existing pattern would work just as well.

DISPLAYING YOUR ORGANIZATIONAL PATTERN PROMINENTLY

Make it easy for your readers to understand your organizational pattern. Displaying your pattern prominently involves three main steps:

- **Create a detailed table of contents.** If your document has a table of contents, including at least two levels of headings helps readers find the information they seek.

For more about tables of contents, see Ch. 18, [p. 482](#). For more about headings and topic sentences, see Ch. 9, [pp. 194](#) and 203.

- **Use headings liberally.** Headings break up the text, making your pages more interesting visually. They also communicate the subject of the section and improve readers' understanding.
- **Use topic sentences at the beginnings of your paragraphs.** The topic sentence announces the main point of a paragraph and helps the reader understand the details that follow.

Understanding Conventional Organizational Patterns

Every argument calls for its own organizational pattern. [Table 7.1](#) explains the relationship between organizational patterns and the kinds of information you want to present.

TABLE 7.1 Organizational Patterns and the Kinds of Information You Want To Present

If you want to ...	Consider using this organizational pattern	For example ...
Explain events that occurred or might occur or tasks that the reader is to carry out	Chronological (p. 152). Most of the time, you present information in chronological order. Sometimes, however, you use reverse chronology.	You describe the process used to diagnose the problem with the accounting software. Or, in a résumé, you describe your more recent jobs before your earlier ones.
Describe a physical object or scene, such as a device or a location	Spatial (p. 153). You choose an organizing principle such as top-to-bottom, east-to-west, or inside-to-outside.	You describe the three main buildings that will make up the new production facility.
Explain a complex situation, such as the factors that led to a problem or the theory that underlies a process	General to specific (p. 155). You present general information first, then specific information. Understanding the big picture helps readers understand the details.	You explain the major changes and the details of a law mandating the use of a new refrigerant in cooling systems.
Present a set of factors	More important to less important (p. 157). You discuss the most important issue first, then the next most important issue, and so forth. In technical communication, you don't want to create suspense. You want to present the most important information first.	When you launch a new product, you discuss market niche, competition, and then pricing.
Present similarities and differences between two or more items	Comparison and contrast (p. 158). You choose from one of two patterns: (1) discuss all the factors related to one item, then all the factors related to the next item, and so forth; (2) discuss one factor as it relates to all the items, then another factor as it relates to all the items, and so forth.	You discuss the strengths and weaknesses of three companies bidding on a contract your company is offering. You discuss everything about Company 1, then everything about Company 2, and then everything about Company 3. Or you discuss the management structure of Company 1, of Company 2, and of Company 3; then you address the engineering expertise of Company 1, of Company 2, and of Company 3; and so forth.
Assign items to logical categories or discuss the elements that make up a single item	Classification or partition (p. 161). Classification involves placing items into categories according to some criterion. Partition involves breaking a single item or a group of items into major elements.	For classification, you group the motors your company manufactures according to the fuel they burn: gasoline or diesel. For partition, you explain the operation of each major component of one of your motors.
Discuss a problem you encountered, the steps you took to address the problem, and the outcome or solution	Problem-methods-solution (p. 163). You can use this pattern in discussing the past, the present, or the future. Readers understand this organizational pattern	In describing how your company is responding to a new competitor, you discuss the problem (the recent loss in sales), the methods (how you plan to examine your product line and business practices), and the solution (which changes will help your

	because they use it in their everyday lives.	company prosper).
Discuss the factors that led to (or will lead to) a given situation, or the effects that a situation led to or will lead to	Cause and effect (p. 166). You can start from causes and speculate about effects, or you can start with the effect and try to determine which factors were the causes of that effect.	You discuss factors that you think contributed to a recent sales dip for one of your products. Or you explain how you think changes to an existing product will affect its future sales.

Long, complex arguments often require several organizational patterns. For instance, one part of a document might be a causal analysis of the problem you are writing about, and another might be a comparison and contrast of two options for solving that problem. [Figure 7.1](#), an excerpt from a user's manual, shows how different patterns might be used in a single document.

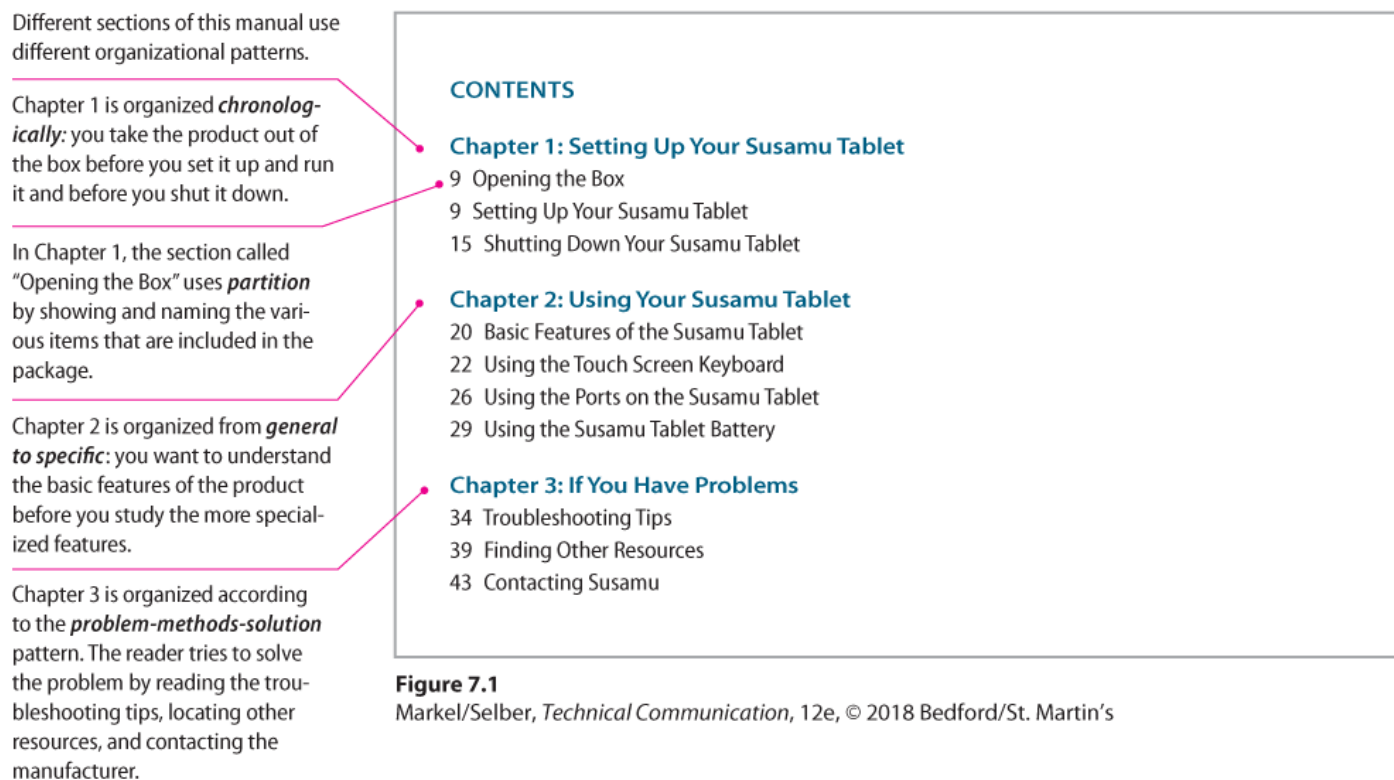


Figure 7.1
Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's

FIGURE 7.1 Using Multiple Organizational Patterns in a Single Document

CHRONOLOGICAL

The chronological — or timeline — pattern is commonly used to describe events. In an *accident report*, you describe the events in the order in which they occurred. In the background section of a *report*, you describe the events that led to the present situation. In a set of slides for an *oral presentation*, you explain the role of social media in U.S. presidential elections by discussing each of the presidential elections, in order, since 2000.

GUIDELINES: Organizing Information Chronologically

These three suggestions can help you write an effective chronological passage.

- **Provide signposts.** If the passage is more than a few hundred words long, use headings. Choose words such as *step*, *phase*, *stage*, and *part*, and consider numbering them. Add descriptive phrases to focus readers' attention on the topic of the section:

Phase One: Determining Our Objectives

Step 3: Installing the Lateral Supports

At the paragraph and sentence levels, transitional words such as *then*, *next*, *first*, and *finally* will help your reader follow your discussion.

For more about transitions, see Ch. 9, p. 207.

- **Consider using graphics to complement the text.** Flowcharts, in particular, help you emphasize chronological passages for all kinds of readers, from the most expert to the general reader.

For more about graphics, see [Ch. 12](#).

- **Analyze events where appropriate.** When you use chronology, you are explaining what happened in what sequence, but you are not necessarily explaining why or how an event occurred or what it means. For instance, the largest section of an accident report is usually devoted to the chronological discussion, but the report is of little value unless it explains what caused the accident, who bears responsibility, and how such accidents can be prevented.

[Figure 7.2](#), a timeline presented on the website of the U.S. Patent and Trademark Office, is organized chronologically.

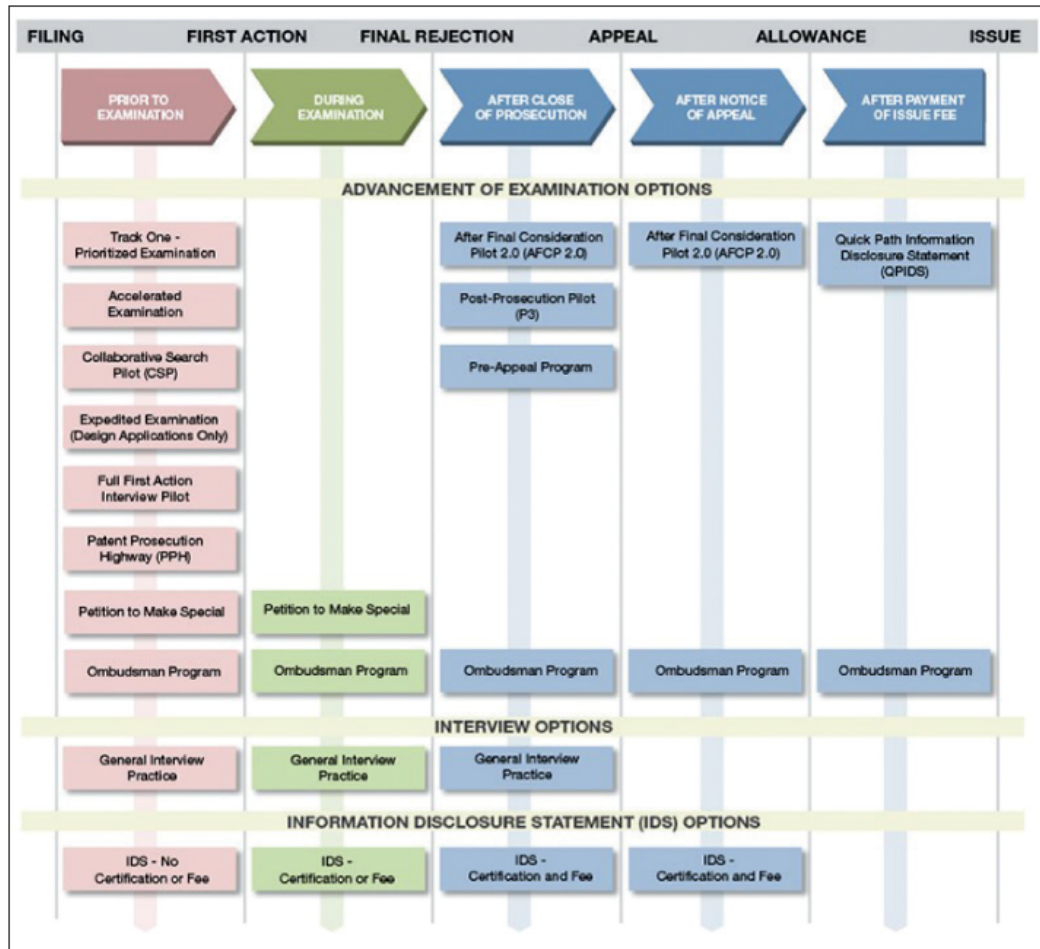


Figure 7.2

Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
 Information from United States Patent and Trademark Office, 2016: www.uspto.gov/patent/initiatives.

FIGURE 7.2 Information Organized Chronologically

The U.S. Patent and Trademark Office created this timeline to display the various programs and initiatives that are available to applicants during each phase of the application process. In the live version of this document on the USPTO website, each program title links to more specific information about objectives and participation requirements.

SPATIAL

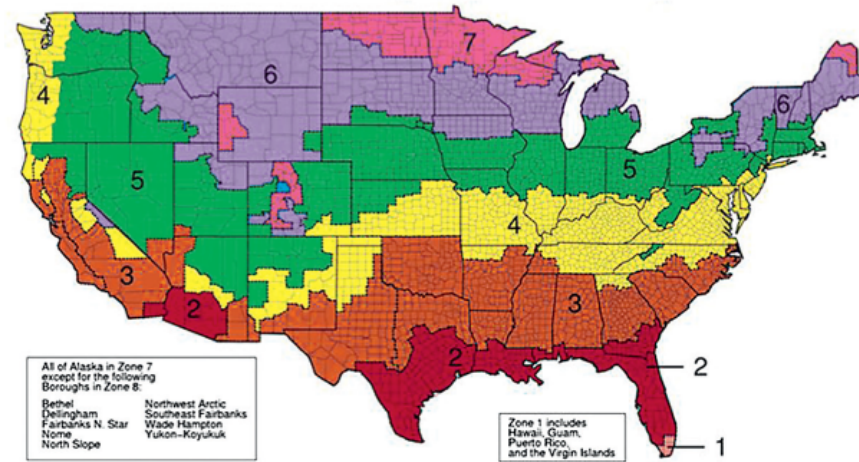
The spatial pattern is commonly used to describe objects and physical sites. In an *accident report*, you describe the physical scene of the accident. In a *feasibility study* about building a facility, you describe the property on which it would be built. In a *proposal* to design a new microchip, you describe the layout of the new chip. The Guidelines box on [page 155](#) can help you organize information spatially.

[Figure 7.3](#) shows the use of spatial organization.

Recommended Levels of Insulation

Insulation level are specified by R-Value. R-Value is a measure of insulation's ability to resist heat traveling through it. The higher the R-Value the better the thermal performance of the insulation. The table below shows what levels of insulation are cost-effective for different climates and locations in the home.

Recommended insulation levels for retrofitting existing wood-framed buildings



Zone	Add Insulation to Attic		Floor
	Uninsulated Attic	Existing 3–4 Inches of Insulation	
1	R30 to R49	R25 to R30	R13
2	R30 to R60	R25 to R38	R13 to R19
3	R30 to R60	R25 to R38	R19 to R25
4	R38 to R60	R38	R25 to R30
5 to 8	R49 to R60	R38 to R49	R25 to R30

Wall Insulation: Whenever exterior siding is removed on an

Uninsulated wood-frame wall:

- Drill holes in the sheathing and blow insulation into the empty wall cavity before installing the new siding, and
- Zones 3–4: Add R5 insulative wall sheathing beneath the new siding
- Zones 5–8: Add R5 to R6 insulative wall sheathing beneath the new siding.

Insulated wood-frame wall:

- For Zones 4 to 8: Add R5 insulative sheathing before installing the new siding.

Figure 7.3

Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's

Information from EnergyStar, 2014: www.energystar.gov/?c=home_sealing.hm_improvement_insulation_table.

FIGURE 7.3 Information Organized Spatially

This information is addressed to homeowners who want to add insulation to their attics or floors. To help readers understand how much insulation they need based on their climate, the writers could have used an alphabetical list of cities or states or zip codes. Instead, the writers chose a map because it enables readers to quickly and easily “see” the climate in their region.

GUIDELINES: Organizing Information Spatially

These three suggestions can help you write an effective spatial passage.

- **Provide signposts.** Help your readers follow the argument by using words and phrases that indicate location (*to the left, above, in the center*) in headings, topic sentences, and support sentences.
- **Consider using graphics to complement the text.** Diagrams, drawings, photographs, and maps clarify spatial relationships.
- **Analyze events where appropriate.** A spatial arrangement doesn't explain itself; you have to do the analysis. A diagram of a floor plan cannot explain why the floor plan is effective or ineffective.

GENERAL TO SPECIFIC

The general-to-specific pattern is useful when your readers need a general understanding of a subject to help them understand and remember the details. For example, in a *report*, you include an executive summary — an overview for managers — before the body of the report. In a set of *instructions*, you provide general information about the necessary tools and materials and about safety measures before presenting the step-by-step instructions. In a *blog*, you describe the topic of the blog before presenting the individual blog posts.

[Figure 7.4](#) (on [page 156](#)), from the U.S. Department of State, explains the principles underlying the nation's cybersecurity policy.

The first paragraph is an *advance organizer*: a general summary of the topics that will be addressed in more detail.

The three topics are announced in the italicized phrases.

These phrases are used at the start of the three sections.

The United States will confront these [cyberterrorism] challenges — while preserving our core principles. Our policies flow from a commitment to both preserving the best of cyberspace and safeguarding our principles. Our international cyberspace policy reflects our core commitments to *fundamental freedoms*, *privacy*, and the *free flow of information*.

Fundamental Freedoms. Our commitment to freedom of expression and association is abiding, but does not come at the expense of public safety or the protection of our citizens. Among these civil liberties, recognized internationally as “fundamental freedoms,” the ability to seek, receive and impart information and ideas through any medium and regardless of frontiers has never been more relevant. As a nation, we are not blind to those Internet users with malevolent intentions, but recognize that exceptions to free speech in cyberspace must also be narrowly tailored. For example, child pornography, inciting imminent violence, or organizing an act of terrorism have no place in any society, and thus, they have no place on the Internet. Nonetheless, the United States will continue to combat them in a manner consistent with our core values — treating these issues specifically, and not as referenda on the Internet’s value to society.

Privacy. Our strategy marries our obligation to protect our citizens and interests with our commitment to privacy. As citizens increasingly engage via the Internet in their public and private lives, they have expectations for privacy: individuals should be able to understand how their personal data may be used, and be confident that it will be handled fairly. Likewise, they expect to be protected from fraud, theft, and threats to personal safety that lurk online — and expect law enforcement to use all the tools at their disposal, pursuant to law, to track and prosecute those who would use the Internet to exploit others. The United States is committed to ensuring balance on both sides of this equation, by giving law enforcement appropriate investigative authorities it requires, while protecting individual rights through appropriate judicial review and oversight to ensure consistency with the rule of law.

Free Flow of Information. States do not, and should not have to choose between the free flow of information and the security of their networks. The best cybersecurity solutions are dynamic and adaptable, with minimal impact on network performance. These tools secure systems without crippling innovation, suppressing freedom of expression or association, or impeding global interoperability. In contrast, we see other approaches — such as national-level filters and firewalls — as providing only an illusion of security while hampering the effectiveness and growth of the Internet as an open, interoperable, secure, and reliable medium of exchange. The same is true commercially; cyberspace must remain a level playing field that rewards innovation, entrepreneurship, and industriousness, not a venue where states arbitrarily disrupt the free flow of information to create unfair advantage. The United States is committed to international initiatives and standards that enhance cybersecurity while safeguarding free trade and the broader free flow of information, recognizing our global responsibilities, as well as our national needs.

Figure 7.4

Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin’s

Information from U.S. Department of State, 2011: www.whitehouse.gov/sites/default/files/rss_viewer/international_strategy_for_cyberspace.pdf.

FIGURE 7.4 Information Organized from General to Specific

GUIDELINES: Organizing Information from General to Specific

These two suggestions can help you use the general-to-specific pattern effectively.

- ▶ **Provide signposts.** Explain that you will address general issues first and then move on to specific concerns. If appropriate, incorporate the words *general* and *specific* or other relevant terms in the major headings or at the start of the text for each item you describe.
- ▶ **Consider using graphics to complement the text.** Diagrams, drawings, photographs, and maps help your reader understand both the general information and the fine points.

MORE IMPORTANT TO LESS IMPORTANT

The more-important-to-less-important organizational pattern recognizes that readers often want the bottom line — the most important information — first. For example, in an *accident report*, you describe the three most important factors that led to the accident before describing the less important factors. In a *feasibility study* about building a facility, you present the major reasons that the proposed site is appropriate, then the minor reasons. In a *proposal* to design a new microchip, you describe the major applications for the new chip, then the minor applications.

For most documents, this pattern works well because readers want to get to the bottom line as soon as possible. For some documents, however, other patterns work better. People who write for readers outside their own company often reverse the more-important-to-less-important pattern because they want to make sure their audience reads the whole discussion. This reversed pattern is also popular with writers who are delivering bad news. For instance, if you want to justify recommending that your organization *not* go ahead with a popular plan, the reverse sequence lets you explain the problems with the popular plan before you present the plan you recommend. Otherwise, readers might start to formulate objections before you have had a chance to explain your position.

[Figure 7.5](#) (on [page 158](#)), from the U.S. Department of Agriculture, shows the more-important-to-less-important organizational structure.

Writers of technical communication often have to explain why some information is more important than other information. To do so, they typically present the more important information first and use words and phrases to signal the importance of the points they present. This paragraph sketches the background of the Forest Service's strategy for combatting the damage done by bark beetles. Notice that the problem the paragraph focuses on first is the health and safety risks posed by the falling trees. The next point, about the environmental impacts, is less important, as suggested by the word "also" in the final sentence.

WESTERN BARK BEETLE STRATEGY OVERVIEW

Across six states of the interior west, over 17.5 million acres of forested lands are infested by bark beetles. The infestation is growing at an estimated 600,000 acres a year with the potential to affect the majority of our western pine, fir and spruce forests. It is estimated that 100,000 beetle-killed trees are currently falling daily, posing a serious health and safety threat to forest visitors, residents and employees. The epidemic is also causing unprecedented environmental impacts.

The [Western Bark Beetle Strategy](#) (PDF, 7.0 MB) developed in 2011 identifies how the Forest Service is responding to and will respond to the western bark beetle epidemic over the next five years (FY 2011–2016). The extent of the epidemic requires prioritization of treatments, first providing for human safety in areas threatened by standing dead hazard trees, and second, addressing dead and down trees that create hazardous fuels conditions adjacent to high value areas. After the priority of safety, forested areas with severe mortality will be reforested with the appropriate species (recovery). Forests will also be thinned to reduce the number of trees per acre and create more diverse stand structures to minimize extensive epidemic bark beetle areas (resiliency). This is a modest strategy that reflects current budget realities, but focuses resources in the most important places that can make a big difference to the safety of the American public.

Here the writer uses the words "first" and "second" to signal priority. Safety is the most important issue; reforestation is less important, as suggested by the phrase "After the priority of safety." Thinning the forests is a lower priority, as suggested by the word "also" in the phrase "Forests will also be thinned."

Figure 7.5

Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
Information from U.S. Department of Agriculture, 2012: www.fs.fed.us/restoration/Bark_Beetle/overview.shtml.

FIGURE 7.5 Information Organized from More Important to Less Important

GUIDELINES: Organizing Information from More Important to Less Important

These three suggestions can help you write a passage organized from more important to less important.

- ▶ **Provide signposts.** Tell your readers how you are organizing the passage. For instance, in the introduction of a proposal to design a new microchip, you might write, "The three applications for the new chip, each of which is discussed below, are arranged from most important to least important."

In creating signposts, be straightforward. If you have two very important points and three less important points, present them that way: group the two important points and label them something like "Major Reasons to Retain Our Current Management Structure." Then present the less important factors as "Other Reasons to Retain Our Current Management Structure." Being straightforward makes the material easier to follow and enhances your credibility.
- ▶ **Explain why one point is more important than another.** Don't just say that you will be arranging the items from more important to less important. Explain why the more important point is more important.
- ▶ **Consider using graphics to complement the text.** Diagrams and numbered lists often help to suggest levels of importance.

COMPARISON AND CONTRAST

Typically, the comparison-and-contrast pattern is used to describe and evaluate two or more items or options. For example, in a *memo*, you compare and contrast the credentials of three finalists for a job. In a *proposal* to

design a new microchip, you compare and contrast two different strategies for designing the chip. In a *video* explaining different types of low-emissions vehicles, you compare and contrast electric cars and hybrids.

The first step in comparing and contrasting two or more items is to determine the *criteria*: the standards or needs you will use in studying the items. For example, if a professional musician who plays the piano in restaurants was looking to buy a new portable keyboard, she might compare and contrast available instruments using the number of keys as one criterion. For this person, 88 keys would be better than 64. Another criterion might be weight: lighter is better than heavier.

Almost always, you will need to consider several or even many criteria. Start by deciding whether each criterion represents a *necessary* quality or merely a *desirable* one. In studying keyboards, for instance, the number of keys might be a necessary quality. If you need an 88-key instrument to play your music, you won't consider any instruments without 88 keys. The same thing might be true of touch-sensitive keys. But a MIDI interface might be less important, a merely desirable quality; you would like MIDI capability, but you would not eliminate an instrument from consideration just because it doesn't have MIDI.

Two typical patterns for organizing a comparison-and-contrast discussion are *whole-by-whole* and *part-by-part*. The following example illustrates the difference between them. The example shows how two printers — Model 5L and Model 6L — might be compared and contrasted according to three criteria: price, resolution, and print speed.

Whole-by-whole	Part-by-part
Model 5L	Price
• price	• Model 5L
• resolution	• Model 6L
• print speed	Resolution
Model 6L	• Model 5L
• price	• Model 6L
• resolution	Print Speed
• print speed	• Model 5L
	• Model 6L

The whole-by-whole pattern provides a coherent picture of each option: Model 5L and Model 6L. This pattern works best if your readers need an overall assessment of each option or if each option is roughly equivalent according to the criteria.

The part-by-part pattern lets you focus your attention on the criteria. If, for instance, Model 5L produces much better resolution than Model 6L, the part-by-part pattern reveals this difference more effectively than the whole-by-whole pattern does. The part-by-part pattern is best for detailed comparisons and contrasts.

You can have it both ways. You can begin with a general description of the various items and then use a part-by-part pattern to emphasize particular aspects.

Once you have chosen the overall pattern — whole-by-whole or part-by-part — you decide how to order the second-level items. That is, in a whole-by-whole passage, you have to sequence the aspects of the items or options being compared; in a part-by-part passage, you have to sequence the items or options themselves.

[Figure 7.6](#) (on [page 160](#)) shows a comparison-and-contrast table about employment in the labor force.

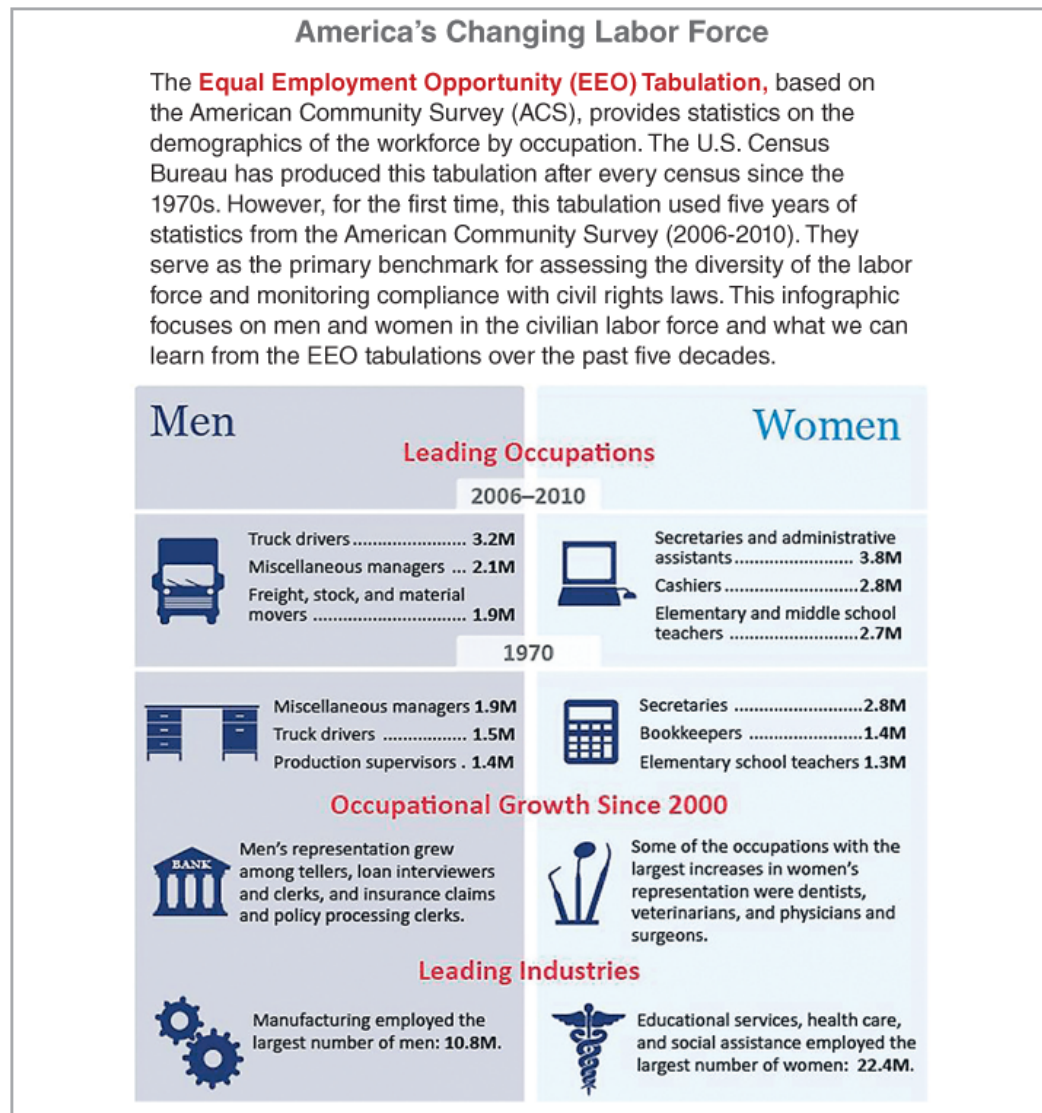


Figure 7.6

Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
Information from U.S. Census Bureau, 2014: www.census.gov/how/infographics/acs_infographic_eeo.html.

FIGURE 7.6 Information Organized by Comparison and Contrast

This excerpt from an infographic published by the federal government presents a lot of information about employment in the civilian labor force in the United States, in the five years from 2006 through 2010 and in 1970. The main theme is the comparison between men and women: how many are in the workforce and what jobs they hold. Because the main basis of comparison and contrast is the sex of workers, the writers chose a basic table structure, with data about men in one column and data about women in the other.

GUIDELINES: Organizing Information by Comparison and Contrast

These four suggestions can help you compare and contrast items effectively.

- ▶ **Establish criteria for the comparison and contrast.** Choose criteria that are consistent with the needs of your audience.
- ▶ **Evaluate each item according to the criteria you have established.** Draw your conclusions.
- ▶ **Organize the discussion.** Choose either the *whole-by-whole* or the *part-by-part* pattern or some combination of the two. Then order the second-level items.
- ▶ **Consider using graphics to complement the text.** Graphics can clarify and emphasize comparison-and-contrast passages. Diagrams, drawings, and tables are common ways to provide such clarification and emphasis.

ETHICS NOTE

COMPARING AND CONTRASTING FAIRLY

Because the comparison-and-contrast organizational pattern is used frequently in evaluating items, it appears often in product descriptions as part of the argument that one company's products are better than a competitor's. There is nothing unethical in this. But it is unethical to misrepresent items, such as when

writers portray their own product as better than it is or portray their competitor's as worse than it is.

Obviously, lying about a product is unethical. But some practices are not so easy to characterize. For example, suppose your company makes tablet computers and your chief competitor's model has a longer battery life than yours. In comparing and contrasting the two tablets, are you ethically obligated to mention battery life? No, you are not. If readers are interested in battery life, it is their responsibility to figure out what your failure to mention battery life means and seek further information from other sources. If you do mention battery life, however, you must do so honestly, using industry-standard techniques for measuring it. You cannot measure your tablet's battery life under one set of conditions and your competitor's under another set.

CLASSIFICATION OR PARTITION

Classification is the process of assigning items to categories. For instance, all the students at a university could be classified by sex, age, major, and many other characteristics. You can also create subcategories within categories, such as males and females majoring in business.

GUIDELINES: Organizing Information by Classification or Partition

These six suggestions can help you write an effective classification or partition passage.

- ▶ **Choose a basis of classification or partition that fits your audience and purpose.** If you are writing a warning about snakes for hikers in a particular state park, your basis of classification will probably be whether the snakes are poisonous. You will describe all the poisonous snakes, then all the nonpoisonous ones.
- ▶ **Use only one basis of classification or partition at a time.** If you are classifying graphics programs according to their technology — paint programs and draw programs — do not include another basis of classification, such as cost.
- ▶ **Avoid overlap.** In classifying, make sure that no single item could logically be placed in more than one category. In partitioning, make sure that no listed component includes another listed component. Overlapping generally occurs when you change the basis of classification or the level at which you are partitioning a unit. In the following classification of bicycles, for instance, the writer introduces a new basis of classification that results in overlapping categories:
 - mountain bikes
 - racing bikes
 - comfort bikes
 - ten-speed bikes

The first three items share a basis of classification: the general category of bicycle. The fourth item has a different basis of classification: number of speeds. Adding the fourth item is illogical because a particular ten-speed bike could be a mountain bike, a racing bike, or a comfort bike.
- ▶ **Be inclusive.** Include all the categories necessary to complete your basis of classification. For example, a partition of an automobile by major systems would be incomplete if it included the electrical, fuel, and drive systems but not the cooling system. If you decide to omit a category, explain why.
- ▶ **Arrange the categories in a logical sequence.** Use a reasonable plan, such as chronology (first to last), spatial development (top to bottom), or importance (most important to least important).
- ▶ **Consider using graphics to complement the text.** Organization charts are commonly used in classification passages; drawings and diagrams are often used in partition passages.

Classification is common in technical communication. In a *feasibility study* about building a facility, you classify sites into two categories: domestic or foreign. In a *journal article* about ways to treat a medical condition, you classify the treatments as surgical or nonsurgical. In a description of a major in a *college catalog*, you classify courses as required or elective.

For more about feasibility reports, see Ch. 18, [p. 471](#).

Partition is the process of breaking a unit into its components. For example, a home-theater system could be partitioned into the following components: TV, amplifier, peripheral devices such as DVD players, and speakers. Each component is separate, but together they form a whole system. Each component can, of course, be partitioned further.

Partition is used in descriptions of objects, mechanisms, and processes. In an *equipment catalog*, you use partition to describe the major components of one of your products. In a *proposal*, you use partition to present a detailed description of an instrument you propose to develop. In a *brochure*, you explain how to operate a product by describing each of its features.

In [Figure 7.7](#), the writer uses classification effectively in introducing categories of tornados to a general audience.

Explanation of EF-Scale Ratings			
Over the course of April 27th, 2011, damage across the entire range of the EF scale was sustained in some portion of the Huntsville County Warning Forecast Area. Below is a chart that explains what type of damage is associated with each ranking on the EF scale, including example photographs from the April 27th event.			
EF Rating	Wind Speeds	Expected Damage	
EF-0	65-85 mph	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.	
EF-1	86-110 mph	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.	
EF-2	111-135 mph	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.	
EF-3	136-165 mph	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.	
EF-4	166-200 mph	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.	
EF-5	> 200 mph	'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.	

Figure 7.7

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Information from National Oceanic and Atmospheric Administration, 2012 Explanation of EF-scale ratings: www.srh.noaa.gov/hun/?n=efscale_explanation.

FIGURE 7.7 Information Organized by Classification

The Enhanced Fujita (EF) rating scale classifies tornados according to their wind speed and destructiveness.

[Figure 7.8](#) illustrates partition. For more examples of partition, see [Chapter 20](#), which includes descriptions of objects, mechanisms, and processes.

PROBLEM-METHODS-SOLUTION

The problem-methods-solution pattern reflects the logic used in carrying out a project. The three components of this pattern are simple to identify:

- **Problem.** A description of what was not working (or not working effectively) or what opportunity exists for improving current processes.
- **Methods.** The procedures performed to confirm the analysis of the problem, solve the problem, or exploit the opportunity.
- **Solution.** The statement of whether the analysis of the problem was correct or of what was discovered or devised to solve the problem or capitalize on the opportunity.

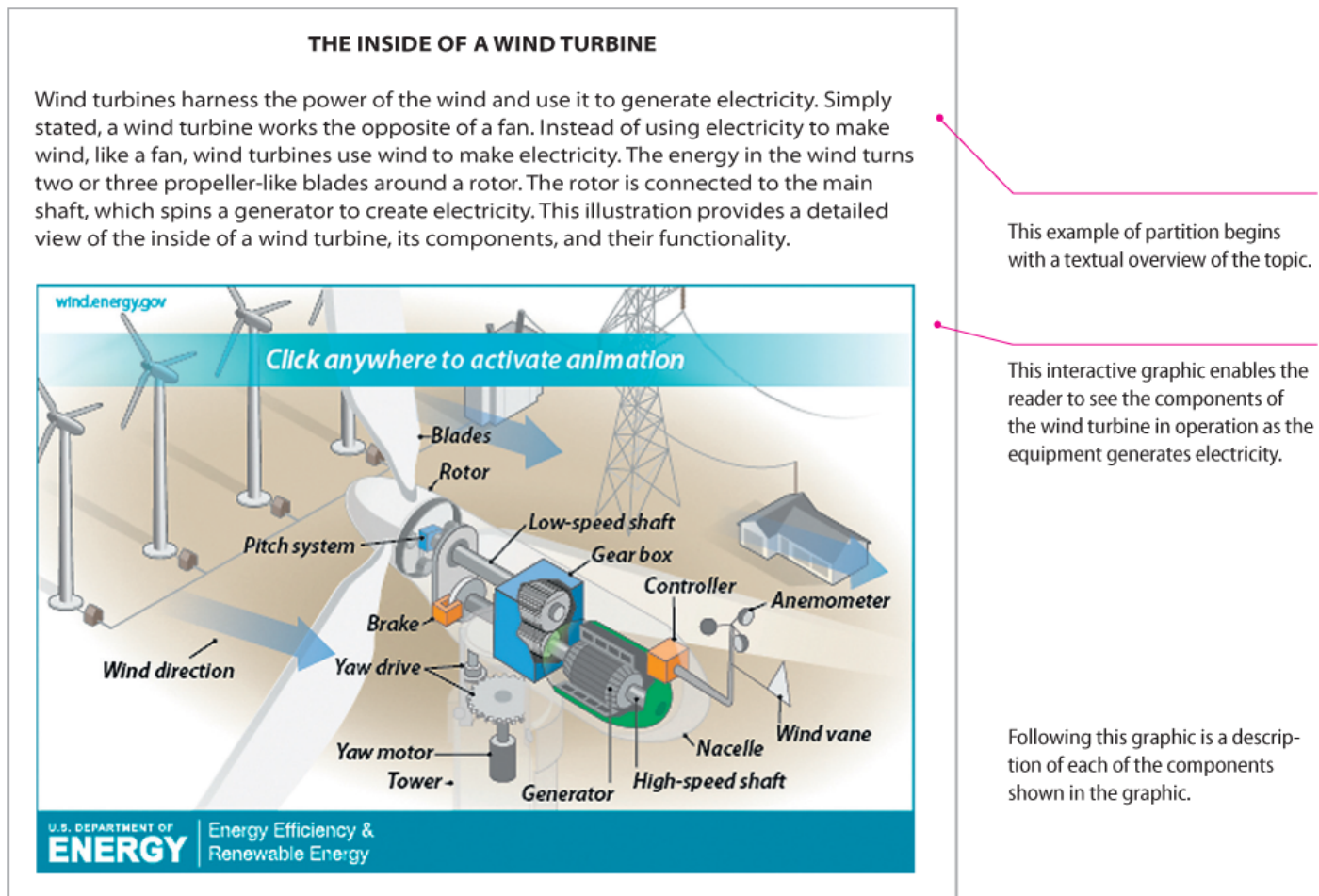


Figure 7.8
 Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
 Information from U.S. Department of Energy, 2013: http://www2.eere.energy.gov/wind/printable_versions/inside_a_wind_turbine.html.

FIGURE 7.8 Information Organized by Partition

The problem-methods-solution pattern is common in technical communication. In a *proposal*, you describe a problem in your business, how you plan to carry out your research, and how your deliverable (an object or a report) can help solve the problem. In a *completion report* about a project to improve a manufacturing process, you describe the problem that motivated the project, the methods you used to carry out the project, and the findings: the results, conclusions, and recommendations.

GUIDELINES: Organizing Information by Problem-Methods-Solution

These five suggestions can help you write an effective problem-methods-solution passage.

- ▶ **In describing the problem, be clear and specific.** Don't write, "Our energy expenditures are getting out of hand." Instead, write, "Our energy usage has increased 7 percent in the last year, while utility rates have risen 11 percent." Then calculate the total increase in energy costs.
- ▶ **In describing your methods, help your readers understand what you did and why you did it that way.** You might need to justify your choices. Why, for example, did you use a *t*-test in calculating the statistics in an experiment? If you can't defend your choice, you lose credibility.
- ▶ **In describing the solution, don't overstate.** Avoid overly optimistic claims, such as "This project will increase our market share from 7 percent to 10 percent within 12 months." Instead, be cautious: "This project could increase our market share from 7 percent to 10 percent." This way, you won't be embarrassed if things don't turn out as well as you had hoped.
- ▶ **Choose a logical sequence.** The most common sequence is to start with the problem and conclude with the solution. However, different sequences work equally well as long as you provide a preliminary summary to give readers an overview and include headings or some other design elements to help readers find the information they want (see [Chapter 11](#)). For instance, you might want to put the methods last if you think your readers already know them or are more interested in the solution.
- ▶ **Consider using graphics to complement the text.** Graphics, such as flowcharts, diagrams, and drawings, can clarify problem-methods-solution passages.

Figure 7.9 shows the problem-methods-solution pattern. The passage is from a case study of a police department using TASER equipment to solve two problems.

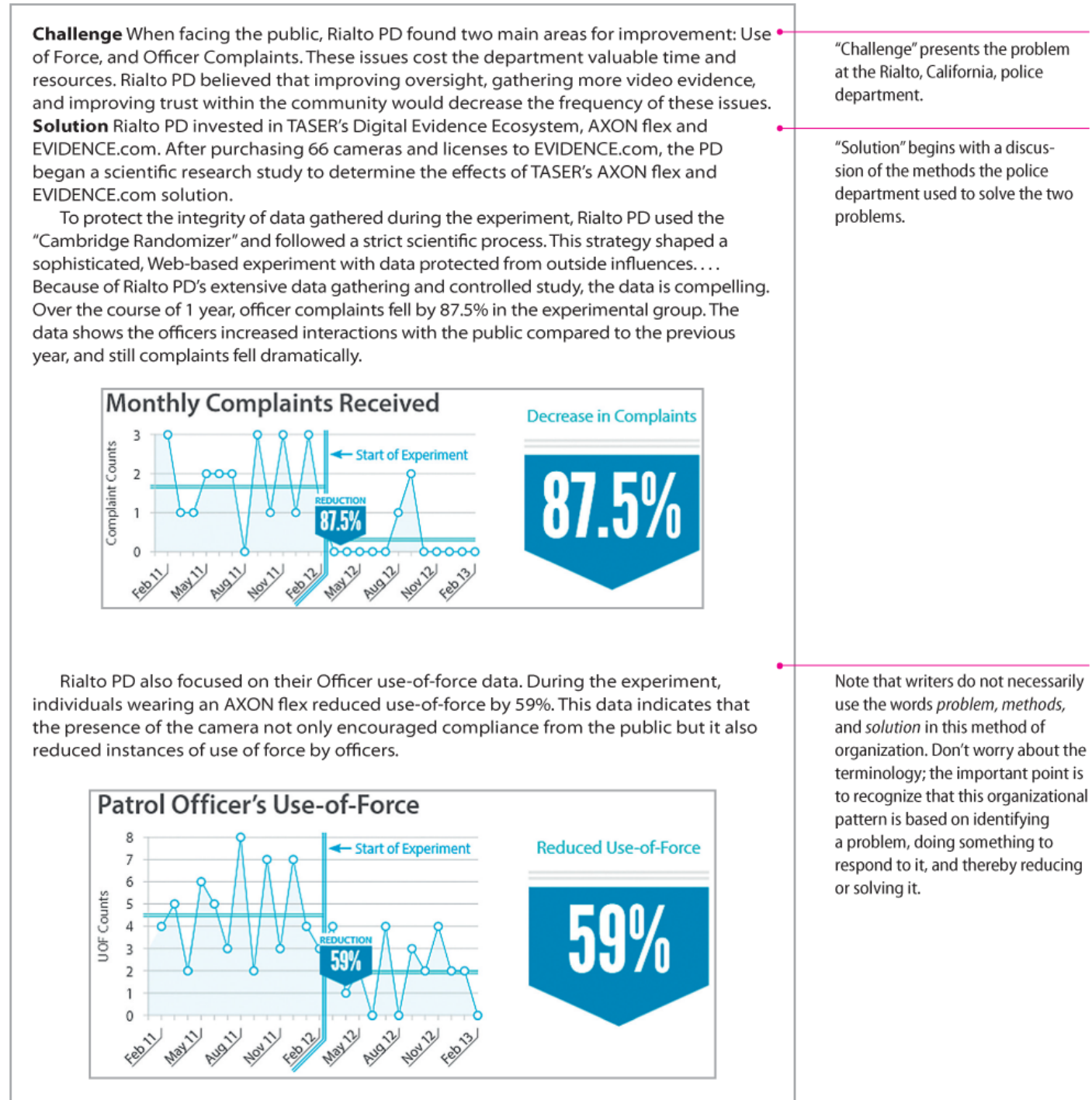


Figure 7.9
Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
Reprinted by permission of TASER International, Inc.

FIGURE 7.9 Information Organized by the Problem-Methods-Solution Pattern

CAUSE AND EFFECT

Technical communication often involves cause-and-effect discussions. Sometimes you will reason forward, from cause to effect: if we raise the price of a particular product we manufacture (cause), what will happen to our sales (effect)? Sometimes you will reason backward, from effect to cause: productivity went down by 6 percent in the last quarter (effect); what factors led to this decrease (causes)? Cause-and-effect reasoning, therefore, provides a way to answer the following two questions:

- What will be the effect(s) of X?
- What caused X?

Arguments organized by cause and effect appear in various types of technical communication. In an *environmental impact statement*, you argue that a proposed construction project would have three important effects on the ecosystem. In the recommendation section of a *report*, you argue that a recommended solution would improve operations in two major ways. In a *memo*, you describe a new policy and then explain the

effects you anticipate the policy will have.

Cause-and-effect relationships are difficult to describe because there is no scientific way to determine causes or effects. You draw on your common sense and your knowledge of your subject. When you try to determine, for example, why the product your company introduced last year sold poorly, you start with the obvious possibilities: the market was saturated, the product was of low quality, the product was poorly marketed, and so forth. The more you know about your subject, the more precise and insightful your analysis will be.

GUIDELINES: Organizing Information by Cause and Effect

These four suggestions can help you write an effective cause-and-effect passage.

- ▶ **Explain your reasoning.** To support your claim that the product was marketed poorly, use specific facts and figures: the low marketing budget, delays in beginning the marketing campaign, and so forth.
- ▶ **Avoid overstating your argument.** For instance, if you write that Bill Gates, the co-founder of Microsoft, “created the computer revolution,” you are claiming too much. It is better to write that Gates “was one of the central players in creating the computer revolution.”
- ▶ **Avoid logical fallacies.** Logical fallacies, such as hasty generalizations or post hoc reasoning, can also undermine your discussion.
For more about logical fallacies, see Ch. 8, p. 186.
- ▶ **Consider using graphics to complement the text.** Graphics, such as flowcharts, organization charts, diagrams, and drawings, can clarify and emphasize cause-and-effect passages.

But a causal discussion can never be certain. You cannot *prove* why a product failed in the marketplace; you can only explain why the factors you are identifying are the most plausible causes or effects. For instance, to make a plausible case that the main reason for the product’s weak performance is that it was poorly marketed, you can show that, in the past, your company’s other unsuccessful products were marketed in similar ways and your company’s successful products were marketed in other ways.

[Figure 7.10](#) illustrates an effective cause-and-effect argument. The writer is explaining why electric vehicles have not sold well in the United States.

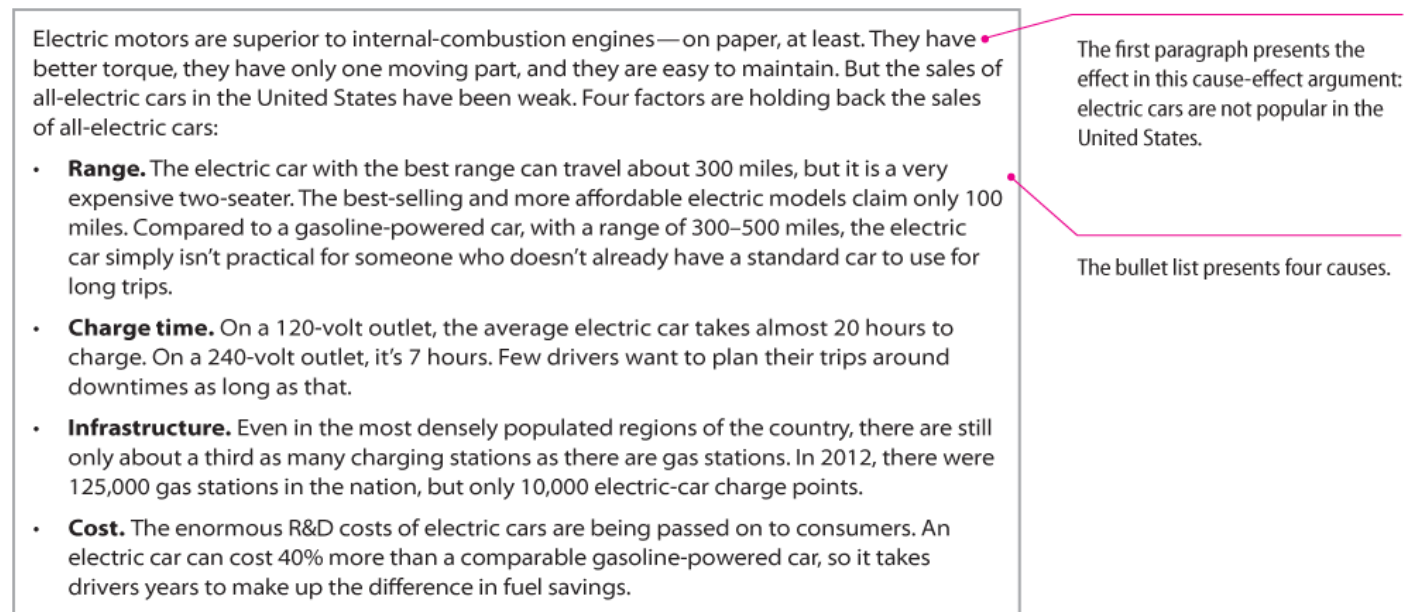


Figure 7.10
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FIGURE 7.10 A Discussion Organized by the Cause-and-Effect Pattern

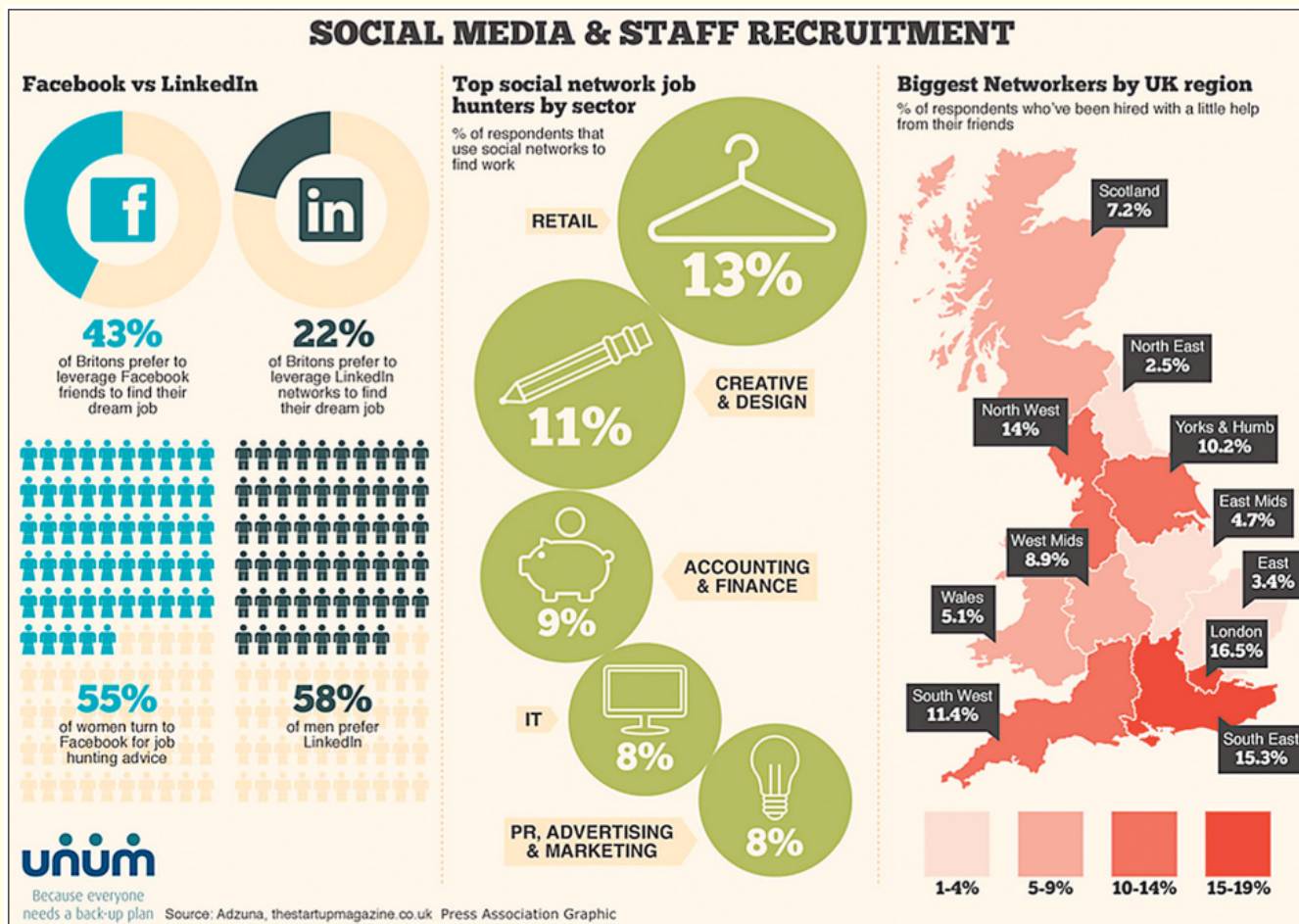
DOCUMENT ANALYSIS ACTIVITY

Using Multiple Organizational Patterns in an Infographic

This infographic about how job seekers in England use social media presents three sets of data, each of

which uses a different organizational pattern. The questions below ask you to think about the organizational patterns.

1. On the left, Facebook and LinkedIn are compared in two pairs of graphics. Is the comparison in each pair clear and easy to understand? Would other types of graphics be easier to understand?
2. In the middle section of the infographic, which organizational pattern is being used? How effective is it in helping readers understand the information?
3. What are the two organizational patterns being used to communicate the data in the map of England?



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 Source: Unum, 2013: www.unum.co.uk/hr/3-staff-recruitment-problems-that-social-media-solves.
 Used by permission of Unum, Ltd.

WRITER'S CHECKLIST

- ☐ Did you analyze your audience and purpose? ([p. 148](#))
- ☐ Did you consider using a conventional pattern of organization? ([p. 149](#))

Did you display your organizational pattern prominently by

- ☐ creating a detailed table of contents? ([p. 150](#))
- ☐ using headings liberally? ([p. 150](#))
- ☐ using topic sentences at the beginnings of your paragraphs? ([p. 150](#))

The following checklists cover the eight organizational patterns discussed in this chapter.

Chronological and Spatial

Did you

- ☐ provide signposts, such as headings and transitional words or phrases? ([pp. 152, 155](#))
- ☐ consider using graphics to complement the text? ([pp. 153, 155](#))
- ☐ analyze events where appropriate? ([pp. 153, 155](#))

General to Specific

Did you

- ☐ provide signposts, such as headings and transitional words or phrases? ([p. 155](#))
- ☐ consider using graphics to complement the text? ([p. 155](#))

More Important to Less Important

Did you

- ☐ provide signposts, explaining clearly that you are using this organizational pattern? ([p. 157](#))
- ☐ explain why the first point is the most important, the second is the second most important, and so forth? ([p. 157](#))
- ☐ consider using graphics to complement the text? ([p. 157](#))

Comparison and Contrast

Did you

- ☐ establish criteria for the comparison and contrast? ([p. 159](#))
- ☐ evaluate each item according to the criteria you established? ([p. 159](#))
- ☐ organize the discussion by choosing the pattern — whole-by-whole or part-by-part — that is most appropriate for your audience and purpose? ([p. 159](#))
- ☐ consider using graphics to complement the text? ([p. 159](#))

Classification or Partition

Did you

- ☐ choose a basis of classification or partition that fits your audience and purpose? ([p. 161](#))
- ☐ use only one basis of classification or partition at a time? ([p. 161](#))
- ☐ avoid overlap? ([p. 161](#))
- ☐ include all the appropriate categories? ([p. 161](#))
- ☐ arrange the categories in a logical sequence? ([p. 161](#))
- ☐ consider using graphics to complement the text? ([p. 161](#))

Problem-Methods-Solution

Did you

- ☐ describe the problem clearly and specifically? ([p. 164](#))

- ☐ if appropriate, justify your methods? ([p. 164](#))
- ☐ avoid overstating your solution? ([p. 164](#))
- ☐ arrange the discussion in a logical sequence? ([p. 164](#))
- ☐ consider using graphics to complement the text? ([p. 164](#))

Cause and Effect

Did you

- ☐ explain your reasoning? ([p. 166](#))
- ☐ avoid overstating your argument? ([p. 166](#))
- ☐ avoid logical fallacies? ([p. 166](#))
- ☐ consider using graphics to complement the text? ([p. 166](#))

EXERCISES

1. Find the website of a company that makes a product used by professionals in your field. (Personal computers are a safe choice.) Locate three discussions on the site that use different organizational patterns. For example, there will probably be a passage devoted to ordering a product from the site (using a chronological pattern), a description of a product (using a partition pattern), and a passage describing why the company's products are superior to those of its competitors (using a comparison-and-contrast argument). Print a copy of the passages you've identified.
2. Identify the best organizational pattern for a discussion of each of the lettered topics that follow. For example, a discussion of distance education and on-campus courses could be organized using the comparison-and-contrast pattern. Write a brief explanation of why the organizational pattern you chose for each topic would be the best one to use. (Use each of the organizational patterns discussed in this chapter at least once.)
 - a. how to register for courses at your college or university
 - b. how you propose to reduce the time required to register for classes or to change a schedule
 - c. your car's dashboard
 - d. the current price of gasoline
 - e. advances in manufacturing technology
 - f. the reasons you chose your college or major
 - g. a student organization on your campus
 - h. two music-streaming services
 - i. tablet computers
 - j. how you propose to increase the ties between your college or university and local business and industry
 - k. college courses
 - l. increased security at airports
 - m. the room in which you are sitting
 - n. the three most important changes you would like to see at your school
 - o. a guitar
 - p. cooperative education and internships for college students
 - q. how to prepare for a job interview
3. You are researching portable projection systems (projectors and screens) for your company's sales staff to use. You are considering such factors as ease of use, size and weight, resolution, and Wi-Fi connectivity. You conclude that the three leading systems are quite similar in all but one characteristic: price. One model costs about 30 percent less than the other two models. In organizing your discussion of the three systems, should you use the whole-by-whole pattern or the part-by-part pattern? Why?
4. Write a 500-word discussion of one of the lettered topics in Exercise 2. If appropriate, include graphics. Preface your discussion with a sentence explaining the audience and purpose of the discussion.



For more practice with the concepts covered in Chapters 5, 6, and 7, complete the LearningCurve activity "Planning the Document" in LaunchPad.

CASE 7: Organizing a Document for Clarity — and Diplomacy

As part of your participation in a teaching-quality initiative for your school's Department of Civil Engineering, you have been assigned to write a brief report that summarizes student evaluations of the department's introductory course. When your supervisor expresses concerns about the report outline you sent her for review, you decide to revisit the organizational patterns covered in this chapter to see how they can help you develop a more effective structure for the report. To read your supervisor's email and start revising the outline, go to LaunchPad.



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Part 3

Developing and Testing the Verbal and Visual Information

CHAPTER 8

Communicating Persuasively

Chapter Introduction

Considering the Context of Your Argument

UNDERSTANDING YOUR AUDIENCE'S BROADER GOALS

WORKING WITHIN CONSTRAINTS

Crafting a Persuasive Argument

IDENTIFYING THE ELEMENTS OF YOUR ARGUMENT

CONSIDERING OPPOSING VIEWPOINTS

USING THE RIGHT KINDS OF EVIDENCE

USING VISUALS AS PERSUASIVE ELEMENTS

ETHICS NOTE: Using Digital Enhancement Tools Responsibly

APPEALING TO EMOTIONS RESPONSIBLY

DECIDING WHERE TO PRESENT THE CLAIM

DOCUMENT ANALYSIS ACTIVITY: Analyzing Evidence in an Argument

UNDERSTANDING THE ROLE OF CULTURE IN PERSUASION

Avoiding Logical Fallacies

Presenting Yourself Effectively

GUIDELINES: Creating a Professional Persona

ETHICS NOTE: *Seeming* Honest Versus *Being* Honest in Persuasive Writing

WRITER'S CHECKLIST

EXERCISES

CASE 8: Analyzing the Persuasiveness of a Poster 

Considering the Context of Your Argument

An argument can be as short as a sentence or as long as a multivolume report. It can take many forms, including oral communication. And it can discuss almost any kind of issue. Here are some examples:

- *From a description of a construction site:*
Features A, B, and C characterize the site.
- *From a study of why a competitor is outselling your company:*
Company X's dominance can be attributed to four major factors: A, B, C, and D.
- *From a feasibility study considering four courses of action:*
Alternative A is better than alternatives B, C, and D.
- *From a set of instructions for performing a task:*
The safest way to perform the task is to complete task A, then task B, and so on.

Before you can develop an effective argument, you must understand your audience's broader goals and your own constraints.

UNDERSTANDING YOUR AUDIENCE'S BROADER GOALS

When you analyze your audience, consider the values that motivate them. Most people are concerned about their own welfare and interests within the company, but they also want their company and their colleagues to prosper. If your document is intended for the public, as opposed to the employees in an organization, consider your audience's personal goals — their desire for health and well-being, for example, or their need to feel safe. Your argument is most likely to be effective if it responds to four goals that most people share: security, recognition, growth, and connectedness.

Security People resist controversial actions that might hurt their own interests. Those who might lose their jobs will likely oppose an argument that their division be eliminated, even if there are many valid reasons to support the argument. Another aspect of security is workload; most people resist an argument that calls for them to work more. People also want security outside the workplace — for instance, in their health care, finances, and personal safety. If you are drafting a press release about the addition of bicycle lanes to a town's already-congested streets, you need to assure residents that the town's civil engineers took the proper steps to ensure that the bike lanes were designed safely.

Recognition People like to be praised for their hard work and their successes. Where appropriate, be generous in your praise. Similarly, people hate being humiliated. Therefore, allow people to save face. Avoid criticizing their actions or positions and speculating about their motivations. Instead, present your argument as a response to the company's or other stakeholders' present and future needs. Look ahead, not back, and be diplomatic. A persuasive advertisement for a hospital's weight-loss support group will not criticize potential members for their lack of exercise or poor diet; rather, it will recognize that they have already been working hard to maintain their health.

One type of workplace document that is used to recognize professional success is a newsletter. A newsletter, a short newspaper published by an organization, can help the organization foster a sense of community within its membership, both internal and external, including customers, employees, investors, and the general public. Newsletters often include descriptions of new activities undertaken by the organization; major investments by the organization in new equipment or facilities; announcements of upcoming events and summaries of previous events, such as presentations, performances, or lectures given by organization members; notices of jobs available in the organization; profiles of new members, officers, or administrators; and important changes in relevant laws or regulations. [Figure 8.1](#) shows an excerpt from a U.S. Department of Labor newsletter.

DOL in Action

San Francisco Giants Pay \$545,000 in Back Wages, Damages

The San Francisco Giants baseball team has paid \$544,715 in back wages and liquidated damages to 74 employees after an investigation determined that the major league club failed to properly pay the workers. As a result of the investigation, Major League Baseball and the department are now working to ensure that all teams are aware of and adhere to the requirements of the Fair Labor Standards Act. Investigators with the department's Wage and Hour Division found minimum wage, overtime pay and record-keeping violations. The violations affected a range of employees in the organization at the major and minor league levels, including clubhouse assistants and managers.

• [Read the News Release](#)

Ohio Company Liable for Nearly \$1.5 Million in Back Wages

The U.S. District Court for the Southern District of Ohio found Cascom Inc. liable for \$1,474,266 in back wages and liquidated damages. According to the lawsuit filed by the department, approximately 250 cable installers had been misclassified as independent contractors by the Fairfield, Ohio, company. The court issued its findings following an investigation by the Wage and Hour Division. Previously, the court ruled that the company and its owner, Julia J. Gress, had misclassified the employees and violated the Fair Labor Standards Act by failing to compensate them for hours worked in excess of 40 per workweek.

• [Read the News Release](#)

Figure 8.1

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Information from U.S. Department of Labor, 2013: www.dol.gov/_sec/newsletter/2013/20130829.pdf.

FIGURE 8.1 Recognizing Accomplishments in a Newsletter

Newsletter articles that report on the activities and accomplishments of the organization not only help keep employees informed but also improve employee morale by making them feel that they are making a difference and that their efforts are appreciated.

Growth People want to develop and grow. They want to learn new skills and assume new duties. People also want to work for an organization that is developing and growing. Your argument will be more persuasive if you can show how the recommended action will help an organization improve the quality of its products or services, branch out into new areas, or serve new customers and stakeholders. A brochure advertising a CPR certification course might emphasize the sense of empowerment that comes with the ability to assist co-workers in danger.

Connectedness People like to be part of communities, whether at work or at home. In the workplace, connectedness can take many forms, from working with others on project teams to participating in company sports leagues to helping improve the community. Organizations that encourage employees to connect with their peers through social media such as wikis, blogs, and discussion forums help satisfy this human need for community. A new trend in the working world is to encourage employees to spend weeks or even months of company time working on community educational or environmental projects. These projects not only improve the organization's image but also help employees feel connected to the community.

[Figure 8.2](#) shows an example of a program that takes advantage of people's need for connectedness. Citizens Connect is a Boston-based initiative that enables city residents to download an app that lets them report infrastructure problems, such as graffiti or broken street lights.

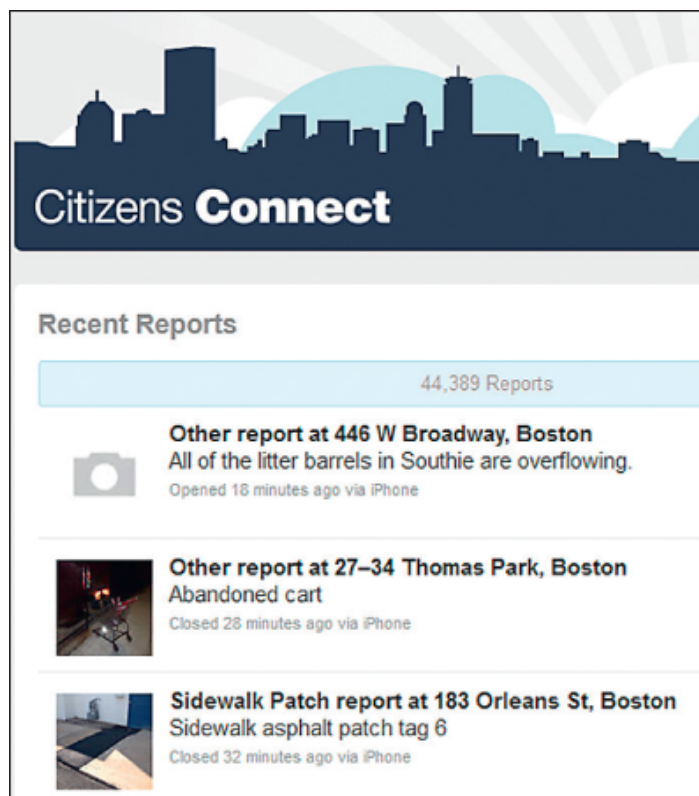


Figure 8.2
 Markel/Selber, *Technical Communication*, 12e, © 2018
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 Information from City of Boston, 2013: <http://www.cityofboston.gov/doit/apps/citizensconnect.asp>.

FIGURE 8.2 Promoting Connectedness

Citizens use a free app on their mobile devices to photograph and report problems. Between 2011, when the City of Boston started Citizens Connect, and 2013, satisfaction with city services rose 22 percent.

WORKING WITHIN CONSTRAINTS

In planning a persuasive document, you need to work within the constraints that shape your environment on the job. As a student, you routinely work within constraints: the amount of information you can gather for a paper, the required length and format, the due date, and so forth. On the job, you will face similar constraints, which fall into eight categories: ethical, legal, political, informational, personnel, financial, time, and format.

Ethical Constraints Your greatest responsibility is to your own sense of what constitutes ethical behavior. Being asked to lie or mislead challenges your ethical standards directly, but in most cases you have options. Some organizations and professional communities have a published code of conduct. In addition, many large companies have ombudspersons: ethics officers who use mediation to help employees resolve ethical conflicts.

For more about ethical and legal constraints, see [Ch. 2](#).

Legal Constraints You must abide by all applicable laws on labor practices, environmental issues, fair trade, consumer rights, and so forth. If you think you have been asked to do something that might be illegal, meet with your organization's legal counsel and, if necessary, with attorneys outside the organization.

Political Constraints Don't spend all your energy and credibility on a losing cause. If you know that your proposal would help the company but that management disagrees with you or that the company can't afford to approve it, either consider what you might achieve through some other means or scale back the idea. Two big exceptions to this rule are matters of ethics and matters of safety. As discussed in [Chapter 2](#), ethical and legal constraints might mean compromise is unacceptable.

Informational Constraints The most common informational constraint is the inability to get the information you need. You might want your organization to buy a piece of equipment, for example, but be unable to find unbiased evidence that would convince a skeptical reader.

What do you do? You tell the truth. Explain the situation, weighing the available evidence and carefully noting what is missing. If you unintentionally suggest that your evidence is better than it really is, you will lose your most important credential: your credibility.

Personnel Constraints The personnel constraint you are most likely to face is a lack of access to as many collaborators as you need. In such cases, present a persuasive proposal to hire the personnel you need. However, don't be surprised if you have to make do with fewer people than you want.

For more about collaboration, see [Ch. 4](#).

Financial Constraints Financial constraints are related to personnel constraints: if you had unlimited funds, you could hire all the personnel you needed. But financial constraints can also affect other kinds of resources: you might not be able to print as many copies of a document as you want, or you might need to settle for black and white instead of full color.

Time Constraints Start by determining the document's deadline. (Sometimes a document will have several intermediate deadlines.) Then create a schedule. Keep in mind that tasks almost always take longer than estimated. And when you collaborate, the number of potential problems increases, because when one person is delayed, others may lack the necessary information to proceed, leading to a logjam.

For more about scheduling, see [Ch. 3, p. 48](#).

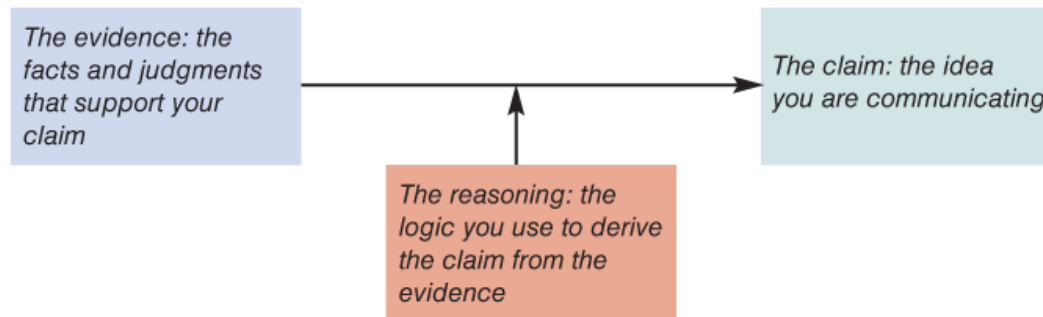
Format Constraints Format constraints are limitations on the size, shape, or style of a document. For example, your reader might want all tables and figures presented at the end of the report. If you are writing to someone in your own organization, follow the format constraints described in the company style guide, if there is one, or check similar documents to see what other writers have done. Also ask more experienced co-workers for their advice. If you are writing to someone in another organization, learn what you can about that organization's preferences.

Crafting a Persuasive Argument

Persuasion is important, whether you wish to affect a reader's attitude or merely present information clearly. To make a persuasive case, you must identify the elements of your argument, consider opposing viewpoints, use the right kinds of evidence, understand the use of visuals as persuasive elements, appeal to emotions responsibly, decide where to state your claim, and understand the role of culture in persuasion.

IDENTIFYING THE ELEMENTS OF YOUR ARGUMENT

A persuasive argument has three main elements:



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The *claim* is the conclusion you want your readers to accept. For example, your claim might be that your company should institute flextime, a scheduling approach that gives employees some flexibility in when they begin and end their workdays. You want your readers to agree with this idea and to take the next steps toward instituting flextime.

The *evidence* is the information you want your readers to consider. For the argument about flextime, the evidence might include the following:

- The turnover rate of our employees with young children is 50 percent higher than that of our employees without young children. The turnover rate for female employees with young children is double that of all employees without young children.
- At exit interviews, 40 percent of our employees with young children stated that they quit so that they could be home for their school-age children.
- Replacing a staff-level employee costs us about one-half the employee's annual salary; replacing a professional-level employee costs a whole year's salary.
- Other companies have found that flextime significantly decreases turnover among employees with young children.
- Other companies have found that flextime has additional benefits and introduces no significant problems.

The *reasoning* is the logic you use to connect the evidence to your claim. In the discussion of flextime, the reasoning involves three links:

- At other companies, flextime appears to have reduced the turnover problem among employees with young children.
- Our company is similar to these other companies.
- Flextime is therefore likely to prove helpful at our company.

CONSIDERING OPPOSING VIEWPOINTS

When you present an argument, you need to address opposing points of view. If you don't, your opponents will conclude that your proposal is flawed because it doesn't address problems that they think are important. In meeting the skeptical or hostile reader's possible objections to your case, you can use one of three tactics, depending on the situation:

- **The opposing argument is based on illogical reasoning or on inaccurate or incomplete facts.** You can counter the argument that flextime increases utility bills by citing unbiased research studies showing that it does not.
- **The opposing argument is valid but is less powerful than your own.** If you can show that the opposing argument makes sense but is outweighed by your own argument, you will appear to be a fair-minded

person who understands that reality is complicated. You can counter the argument that flextime reduces carpooling opportunities by showing that only 3 percent of your employees currently use carpooling and that three-quarters of these employees favor flextime anyway because of its other advantages.

- **The two arguments can be reconciled.** If an opposing argument is not invalid or clearly inferior to your own, you can offer to study the situation thoroughly to find a solution that incorporates the best from each argument. For example, if flextime might cause serious problems for your company's many carpoolers, you could propose a trial period during which you would study several ways to help employees find other carpooling opportunities. If the company cannot solve the problem or if most of the employees prefer the old system, you would switch back to it. This proposal can remove much of the threat posed by your ideas.

When you address an opposing argument, be gracious and understated. Focus on the argument, not on the people who oppose you. If you embarrass or humiliate them, you undermine your own credibility and motivate your opponents to continue opposing you.

There is no one best place in your document to address opposing arguments. In general, however, if you know that important readers hold opposing views, address those views relatively early. Your goal is to show *all* your readers that you are a fair-minded person who has thought carefully about the subject and that your argument is stronger than the opposing arguments.

USING THE RIGHT KINDS OF EVIDENCE

People most often react favorably to four kinds of evidence: numerical data, examples, expert testimony, and visual evidence.

For advice on evaluating information from the Internet, see Ch. 6, [p. 129](#).

- **Numerical data.** Numerical data — statistics — are generally more persuasive than commonsense arguments.

Statistics drawn from the personnel literature (McClellan, 2013) show that, among Fortune 500 companies, flextime decreases turnover by 25 to 35 percent among employees with young children.

Notice that the writer states that the study covered many companies, not just one or a handful. If the sample size were small, the claim would be much less persuasive. (The discussion of logical fallacies later in this chapter explains such *hasty generalizations*.)

- **Examples.** An example makes an abstract point more concrete and therefore more vivid and memorable.

Mary Saunders tried for weeks to arrange for child care for her two preschoolers that would enable her to start work at 7 A.M., as required at her workplace. The best she could manage was having her children stay with a nonlicensed provider. When conditions at that provider led to ear infections in both her children, Mary decided that she could no longer continue working.

Examples are often used along with numerical data. The example above gives the problem a human dimension, but the argument also requires numerical data to show that the problem is part of a pattern, not an isolated event.

- **Expert testimony.** A message from an expert is more persuasive than the same message from someone without credentials. A well-researched article on flextime written by a respected business scholar in a reputable business journal is likely to be persuasive. When you make arguments, you will often cite expert testimony from published sources or interviews you have conducted.

Related to expert testimony are testimonials by peers and members of the general public. Although individually testimonials aren't as strong as expert testimony, a series of strong testimonials from reliable sources can make a convincing case about a product, service, or policy. [Figure 8.3](#), from the website of Skillcrush, shows an effective use of testimonials.

- **Visual evidence.** Images and graphics can help you convey technical information to support your points. Photographs, for example, are often used to document an event. The photographs in [Figure 8.4](#) show the melting of a glacier over a period of 65 years. Other types of visuals, such as maps and charts, can demonstrate data or ideas graphically, making information easier to understand. For more on the use of graphics, see [Chapter 12](#).

PEOPLE ARE TALKING

What They Say About Skillcrush:

"The beauty of Skillcrush is how it turns a world that outsiders view as either walled off or indecipherable, into simple, relatable language."

FAST COMPANY

"Using Skillcrush is like learning from your friendly, accessible best girl friend (not that it matters — about 25% of Skillcrush users are men)."

Mashable

"Skillcrush is teaching the next generation of programmers and entrepreneurs. [They're] re-shaping the whole discussion about how you learn to code and what you do with it. That's a big deal."

BUSINESS INSIDER

Figure 8.3

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Information from Skillcrush, 2014: <http://skillcrush.com/about/>.

FIGURE 8.3 Using Testimonials To Make a Persuasive Argument

If you work for Skillcrush, which describes itself as "an interactive online learning community for creatives, thinkers, and makers," and wish to make the point that your service is valuable, you explain why. But your argument is more persuasive if you can also show that others think so, too. These three testimonials are enhanced by the use of the companies' logos.



Figure 8.4

Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
Information from National Aeronautics and Space Administration, 2013: http://climate.nasa.gov/state_of_flux#Icemelt_Alaska14.jpg.

FIGURE 8.4 A Photograph Used To Provide Technical Information

Images of the same scene at different times can provide technical information about changes in a physical environment. On the left is a photo of Northwestern Glacier, in Alaska, in 1940; on the right is the same scene in 2005.

[Figure 8.5](#), excerpts from a white paper published by McAfee, the computer-security company, shows a portion of an argument that combines several of these types of evidence. A white paper is an argument, typically 10–20 pages long, that a company's product or service will solve a technological or business challenge in an industry. The readers of white papers are technical experts who implement technology and managers who make purchasing decisions.

Having investigated intrusions such as Operation Aurora and NightDragon (the systemic long-term compromise of Western oil and gas industry), as well as numerous others that have not been disclosed publicly, I am convinced that every company in every conceivable industry with significant size and valuable intellectual property and trade secrets has been compromised (or will be shortly), with the great majority of the victims rarely discovering the intrusion or its impact. In fact, I divide the entire set of Fortune Global 2,000 firms into two categories: those that *know they've been compromised* and those that *don't yet know*.

...

What we have witnessed over the past five to six years has been nothing short of a historically unprecedented transfer of wealth—closely guarded national secrets (including those from classified government networks), source code, bug databases, email archives, negotiation plans and exploration details for new oil and gas field auctions, document stores, legal contracts, supervisory control and data acquisition (SCADA) configurations, design schematics, and much more has “fallen off the truck” of numerous, mostly Western companies and disappeared in the ever-growing electronic archives of dogged adversaries.

What is happening to all this data—by now reaching petabytes as a whole—is still largely an open question. . . . Yet, the public (and often the industry) understanding of this significant national security threat is largely minimal due to the very limited number of voluntary disclosures by victims of intrusion activity compared to the actual number of compromises that take place. With the goal of raising the level of public awareness today, we are publishing the most comprehensive analysis ever revealed of victim profiles from a five-year targeted operation by one specific actor — “Operation Shady RAT,” as I have named it at McAfee (RAT is a common acronym in the industry that stands for remote access tool).

...

McAfee has gained access to one specific command and control (C&C) server used by the intruders. We have collected logs that reveal the full extent of the victim population since mid-2006 when the log collection began. Note that the actual intrusion activity may have begun well before that time, but that is the earliest evidence we have for the start of the compromises. The compromises themselves were standard procedure for these types of targeted intrusions: a spear-phishing email containing an exploit is sent to an individual with the right level of access at the company, and the exploit, when opened, on an unpatched system will trigger a download of the implant malware. That malware will execute and initiate a backdoor communication channel to the C&C Web server and interpret the instructions encoded in the hidden comments embedded in the Web page code. This will be quickly followed by live intruders jumping on to the infected machine and proceeding to quickly escalate privileges and move laterally within the organization to establish new persistent footholds via additional compromised machines running implant malware, as well as targeting for quick exfiltration the key data they came for.

After painstaking analysis of the logs, even we were surprised by the enormous diversity of the victim organizations and were taken aback by the audacity of the perpetrators. Although we will refrain from explicitly identifying most of the victims, describing only their general industry, we feel that naming names is warranted in certain cases, not with the goal of attracting attention to a specific victim organization, but to reinforce the fact that virtually everyone is falling prey to these intrusions, regardless of whether they are the United Nations, a multinational Fortune 100 company, a small, non-profit think tank, a national Olympic team, or even an unfortunate computer security firm.

This white paper was written by Dmitri Alperovitch, McAfee's Vice President for Threat Research. A highly regarded security expert, Alperovitch has won numerous awards, including selection in 2013 as one of *MIT Technology Review's* Top 35 Innovators Under 35. This first paragraph, with its use of “I” and the references to projects with which Alperovitch is associated, presents him as an **expert**. The logic is that if he thinks these security threats are credible, you should, too.

Paragraph 2 presents a series of **examples** of what the writer calls an “unprecedented transfer of wealth.”

The writer presents additional **examples** of the nature and scope of the attacks. In the rest of the 14-page white paper, he presents **statistics** and **examples** describing the 71 attacks that he is calling Operation Shady RAT. The evidence adds up to a compelling argument that the threat is real and serious, and McAfee is the organization you should trust to help you protect yourself from it.

Figure 8.5

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Source: Dmitri Alperovitch, McAfee, “Revealed: Operation Shady RAT” white paper.

FIGURE 8.5 Using Different Types of Evidence in an Argument

USING VISUALS AS PERSUASIVE ELEMENTS

When used responsibly, visuals that provide nontechnical information can lend powerful support to your argument. The alarming image in [Figure 8.6](#) of tap water catching on fire was used by Greenpeace to illustrate the potential dangers of hydraulic fracturing (“fracking”). The poster in [Figure 8.7](#) combines verbal and visual techniques to convince readers to take precautions to avoid contracting a dangerous virus.



Figure 8.6

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© Les Stone/Greenpeace.

FIGURE 8.6 A Persuasive Photograph

A Pennsylvania woman who lives near a fracking site demonstrates that flammable methane gas has contaminated her home's water supply. The photograph of water catching on fire is much more striking than a text description would be.

CDC's Response to **Zika**

STOP MOSQUITO BITES. DON'T STOP OUTDOOR ACTIVITIES.



Protect yourself from Zika
Zika is a disease primarily spread by mosquitoes, so if you're outdoors, protect yourself from bites.

Know before you go
Zika is not being spread in the continental United States at this time. As the mosquito season begins, find out areas where Zika is spreading: www.cdc.gov/zika/geo

What to take with you

- EPA - registered insect repellent (Look for these ingredients: DEET, picaridin, IR3535, oil of lemon eucalyptus or para-menthane-diol, or 2-undecanone.)
- Long-sleeved shirts and long pants.
- Clothing and gear treated with permethrin.
- A tent to sleep in (if mosquitoes can get to where you're sleeping.)

Protect yourself and your family

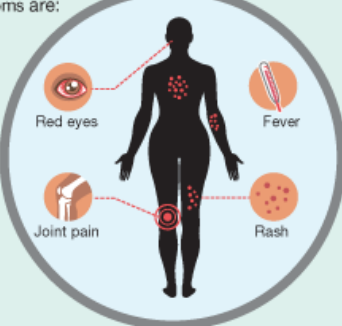
- Use insect repellent. Reapply as directed. Remember to apply sunscreen first and then insect repellent.
- Cover exposed skin when possible.
- If you're camping or sleeping outside, use a tent.
- Dress kids in clothing that covers arms and legs.
- Cover strollers and baby carriers with mosquito netting.
- Spray repellent onto your hands to apply to a child's face. Don't use repellent on babies younger than 2 months old.
- Do not use OLE on children under 3.

STOP the spread
If you have been in an area with Zika

- Watch for symptoms. Call your doctor immediately if you get sick.
- If you've been in an area with Zika, use insect repellent for 3 weeks after travel.
- Use condoms when you have sex.

Zika symptoms
Many people with Zika don't know they have it. The illness is usually mild with symptoms lasting about a week.

The most common symptoms are:




For more information: www.cdc.gov/zika

 U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Figure 8.7
Markel/Selber, *Technical Communication*, 12e, © 2018 Bedford/St. Martin's
Information from U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2016: www.cdc.gov/zika/pdfs/fs-outdoors.pdf.

FIGURE 8.7 Verbal and Visual Techniques in Persuasion

ETHICS NOTE

USING DIGITAL ENHANCEMENT TOOLS RESPONSIBLY

Many tools are available to enhance and otherwise alter digital images, but manipulating photographs or videos in order to strengthen an argument is most likely unethical and possibly illegal. Photo editing, according to the Code of Ethics of the [National Press Photographers Association \(2016\)](#), "should maintain the integrity of the photographic images' content and context. Do not manipulate images or add or alter sound in any way that can mislead viewers or misrepresent subjects."

APPEALING TO EMOTIONS RESPONSIBLY

Writers sometimes appeal to the emotions of their readers. Writers usually combine emotional appeals with appeals to reason. For example, an argument that we ought to increase foreign aid to drought-stricken African countries might describe (and present images of) the human plight of the victims but also include reason-based sections about the extent of the problem, the causes, the possible solutions, and the pragmatic reasons we might want to increase foreign aid.

When you use emotional appeals, do not overstate or overdramatize them, or you will risk alienating readers. Try to think of additional kinds of evidence to present that will also help support your claim. [Figure](#)

8.8 (on [page 184](#)) shows a brief argument that relies on an emotional appeal.

This excerpt from the Army recruitment site, GoArmy.com, describes the Drill Sergeant School.

The photo and the text present a reasonable mix of information and emotion. The site provides facts about how drill sergeants are chosen and trained and the responsibilities they carry. The lives of drill sergeants are not always heroic and romantic; they have to teach recruits how to make their beds, for instance. But the discussion is clearly meant to appeal to the emotions of people who are considering joining the Army with the goal of becoming drill sergeants. The passage repeatedly refers to drill sergeants as being “the best.” Only a select few NCOs can become drill sergeants. They become role models, carrying themselves with pride.

Everyone likes to think of himself or herself as a special person doing an important job. As long as the facts that accompany an emotional appeal are accurate and presented honestly, an emotional appeal is responsible.



DRILL SERGEANT SCHOOL

To Become A Drill Sergeant, You Always Have To Be “Squared Away”

A spot in Drill Sergeant School. It's one of the highest honors the U.S. Army can bestow a Non-Commissioned Officer (NCO). Only the most qualified NCOs are chosen to attend Drill Sergeant School, where they are trained to fulfill a role of utmost importance—the role of a Drill Sergeant. After all, Drill Sergeants teach new recruits every aspect of Basic Combat Training—which means they have the great responsibility of shaping recruits into the best Soldiers in the world.

NCOs who attend Drill Sergeant School are called Drill Sergeant Candidates. Their training is strenuous. The School's curriculum mimics Basic Combat Training, week for week, because Candidates must be experts in all facets of BCT to begin training recruits. They receive top-notch training from their Drill Sergeant Instructors because they'll soon be expected to deliver great training.

The “Ultimate Job” For A Sergeant

For many Candidates, becoming a Drill Sergeant is a “military dream.” It means they have proven themselves again and again—so much so that they're entrusted with training new recruits. They know that when they receive their Drill Sergeant hat, they'll have the ultimate job—being a role model—and they take it very seriously.

More Than Just A Unique Hat

Earning the Drill Sergeant's hat is not easy. When NCOs are tapped to attend Drill Sergeant School, they know they'll have to be able to teach new recruits the proper way to do absolutely everything in the Army—from making a bed, to wearing a uniform, to firing a rifle. They will have to become the best, because U.S. Army recruits deserve to learn from the best. In the end, Drill Sergeants are instantly recognizable. Not only because of their unique hat, but also because of the way they speak with authority and carry themselves with utmost pride.

Figure 8.8

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Information from GoArmy.com, 2013: www.goarmy.com/soldier-life/being-a-soldier/ongoing-training/specialized-schools/drill-sergeant-school.html.

FIGURE 8.8 An Argument Based on an Emotional Appeal

DECIDING WHERE TO PRESENT THE CLAIM

In most cases, the best place to state your claim is at the start of the argument. Then provide the evidence and, if appropriate, the reasoning. Sometimes, however, it is more effective to place the claim *after* the evidence and the reasoning. This indirect structure works best if a large number of readers oppose your claim. If you present your claim right away, these readers might become alienated and stop paying attention. You want a chance to present your evidence and your reasoning without causing this kind of undesirable reaction.

DOCUMENT ANALYSIS ACTIVITY

Analyzing Evidence in an Argument

In this excerpt from an article on the job service [Monster.com](#), the writer presents an argument about hiring a social-media officer. The questions below ask you to consider the nature of the evidence this writer presents.

1. In the first two paragraphs, the writer tells a story. Which kind of evidence is this, and how effective is it?
2. In paragraph 3, we learn the occupation of the person on that unpleasant flight. How does this new information add to the effectiveness of the argument?
3. Does paragraph 4 present any evidence? If not, what function does it serve?

Social Media Strategy: Is It Time to Hire a Social Media Officer?

- 1 When Ted Rubin (@tedrubin) touched down in Asheville, NC after a particularly unpleasant flight with a carrier he rarely uses, he immediately posted an update to his 54,000 Twitter followers. “Just landed ... boy do I miss @JetBlue.”

A few minutes later, a representative from Jet Blue responded to say thanks. While Rubin tagged the other airline in his original tweet, he never heard back from them. “Guess who I’ll be flying next?” he laughs.

- 2 Rubin, who serves as Chief Social Marketing Officer for the shopping Web site [Collective Bias](#), says this type of personal engagement isn’t a novelty anymore — customers have come to expect it. “Social media is way deeper than most companies understand,” he says. “It’s time to recognize that social isn’t just campaign-based, it’s an integrated part of your ongoing business strategy.”

- 3 Let’s face it — your social media strategy is about more than [monitoring social media](#) — it touches customer service, vendor relations, social media recruiting and more. Thus many organizations are bringing in new staff to handle their social media strategy.

Source: Emily Bennington, “Social Media Strategy: Is it Time to Hire a Social Media Officer?” [Monster.com](#), 2014.

UNDERSTANDING THE ROLE OF CULTURE IN PERSUASION

If you are making a persuasive argument to readers from another culture, keep in mind that cultures differ significantly not only in matters such as business customs but also in their most fundamental values. These differences can affect persuasive writing. Culture determines both what makes an argument persuasive and how arguments are structured:

- **What makes an argument persuasive.** Statistics and experimental data are fundamental kinds of evidence in the West, but testimony from respected authority figures can be much more persuasive in the East.
- **How to structure an argument.** In a Western culture, the claim is usually presented up front. In an Eastern culture, it is likely to be delayed or to remain unstated but implied.

When you write for an audience from another culture, use two techniques:

- Study that culture, and adjust the content, structure, and style of your arguments to fit it.
- Include in your budget the cost of having important documents reviewed and edited by a person from the target culture. Few people are experts on cultures other than their own.

For more about writing for people from other cultures, see Ch. 5, [p. 101](#).

Avoiding Logical Fallacies

A logical fallacy — that is, a mistake in reasoning — can undercut the persuasiveness of your writing. An example is “Antidepressants are a scam; I know that because Tom Cruise says so, and he’s a world-famous actor.” Although Tom Cruise is a world-famous actor, it does not follow that what he thinks about antidepressants is true. [Table 8.1](#) explains some of the most common logical fallacies.

TABLE 8.1 Common Logical Fallacies

Fallacy	Explanation	Example and comment
Ad hominem argument; also called <i>argument against the speaker</i>	An argument against the writer, not against the writer’s argument	“Of course Matthew wants us to buy more computers — he’s a computer geek.” The fact that Matthew is a “computer geek” doesn’t necessarily mean that his argument for buying more computers is unwise.
Argument from ignorance	An argument that a claim is true because it has never been proven false, or false because it has never been proven true	“Nobody has ever proven that global warming is occurring. Therefore, global warming is a myth.” The fact that a concept has not yet been proven does not necessarily mean that it is false. Perhaps the measurement techniques are insufficiently precise or not yet available.
Appeal to pity	An argument based on emotion, not reason	“We shouldn’t sell the Ridgeway division. It’s been part of the company for over 40 years.” The fact that the division has long been a part of the company is not in itself a good reason to retain it.
Argument from authority	An argument that a claim is valid because the person making the claim is an authority	“According to world-renowned climatologist Dr. William Smith, global warming is definitely a fact.” Even if Dr. Smith is a recognized authority in this field, the claim that global warming is a fact is not valid unless you present a valid argument to support it.
Circular argument	An argument that restates its main point without presenting any evidence to support it	“Facebook’s stock price keeps falling because the company’s value is still going down.” Because a company’s stock price is a measure of the company’s value, the argument simply says that Facebook’s stock price keeps falling because its stock price keeps falling. Using the word <i>because</i> doesn’t necessarily mean that the writer has presented a reason. The writer needs to explain <i>why</i> the stock price keeps going down.
Either-or argument	An argument that poses only two alternatives when in fact there might be more	“Either we start selling our products online or we’re going to be out of business within a year.” This statement does not explain why these are the only two alternatives. The company might improve its sales by taking measures other than selling online.
Ad populum argument; also called <i>bandwagon argument</i>	An argument that a claim is valid because many people think it is or act as if it is	“Our four major competitors have started selling online so we should, too.” The fact that our competitors are selling online is not in itself an argument that we should sell online, too.
Hasty generalization; sometimes called <i>inadequate sampling</i>	An argument that draws conclusions based on an insufficient number of cases	“The new Tata is an unreliable car. Two of my friends own Tatas, and both have had reliability problems.” To reach any valid conclusions, you would have to study a much larger sample and compare your findings with those for other cars in the Tata’s class.

Post hoc reasoning (the complete phrase is <i>post hoc, ergo propter hoc</i>)	An argument that claims that because A precedes B, A caused B	“There must be something wrong with the new circuit breaker in the office. Ever since we had it installed, the air conditioners haven’t worked right.” Maybe the air conditioners are malfunctioning because of the circuit breaker, but the malfunction might have other causes.
Oversimplifying	An argument that omits important information in establishing a causal link	“The way to solve the balance-of-trade problem is to improve the quality of the products we produce.” Although improving quality is important, international trade balances are determined by many factors, including tariffs and currency rates, and therefore cannot be explained by simple cause-and-effect reasoning.

Presenting Yourself Effectively

No matter how strong your arguments, your audience won't read them — or won't read them sympathetically — unless they see you as a professional.

GUIDELINES: Creating a Professional Persona

Your *persona* is how you appear to your readers. Demonstrating the following four characteristics will help you establish an attractive professional persona.

- ▶ **Cooperativeness.** Make clear that your goal is to solve a problem, not to advance your own interests.
- ▶ **Moderation.** Be moderate in your judgments. The problem you are describing will not likely spell doom for your organization, and the solution you propose will not solve all the company's problems.
- ▶ **Fair-mindedness.** Acknowledge the strengths of opposing points of view, even as you offer counterarguments.
- ▶ **Modesty.** If you fail to acknowledge that you don't know everything, someone else will be sure to volunteer that insight.

In the first three sentences, the writer acknowledges the problems with his recommendation.

The use of "I think" adds an attractive modesty; the recommendation might be unwise.

The recommendation itself is moderate; the writer does not claim that the plan will save the world.

In the last two sentences, the writer shows a spirit of cooperativeness by focusing on the company's goals.

The following paragraph shows how a writer can demonstrate the qualities of cooperativeness, moderation, fair-mindedness, and modesty:

This plan is certainly not perfect. For one thing, it calls for a greater up-front investment than we had anticipated. And the return on investment through the first three quarters is likely to fall short of our initial goals. However, I think this plan is the best of the three alternatives for the following reasons Therefore, I recommend that we begin planning immediately to implement the plan. I am confident that this plan will enable us to enter the 3-D market successfully, building on our fine reputation for high-quality advanced electronics.

[Figure 8.9](#) presents two professional-sounding paragraphs from a student's job-application letter.

A student writer uses specific examples to persuade a prospective employer.

Without making her claim explicit, the writer presents evidence that she is hardworking and lets the prospective employer draw his or her own conclusions.

In listing some of the training courses she has taken, the writer supports an earlier claim that her broad background might be of use to her next employer.

At Western State University, I have earned 87 credits toward a degree in Technical Communication. I have been a full-time student (no fewer than 12 credit hours per semester) while working full-time for the Northwest Watershed Research Center. The four upper-division courses I am taking this semester, including Advanced Technical Communication and Technical Editing, are required for the BA in Technical Communication.

In addition to my formal education, I have completed 34 training courses on the job. These courses have included diverse topics such as financial management, the Fair Labor Standards Act, the Americans with Disabilities Act, career-development opportunities in public affairs, and software applications such as MS Office, Quark XPress, and RoboHelp.

Figure 8.9

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FIGURE 8.9 Persuading a Prospective Employer

ETHICS NOTE

SEEMING HONEST VERSUS BEING HONEST IN PERSUASIVE WRITING

The young actor asks the old actor, "What's the key to great acting?" The old actor replies, "Sincerity. Once you learn how to fake sincerity . . ." Any discussion of image and persuasion has to address the question at the heart of this old joke. Does a writer have to be honest to appear honest?

There are tricks for appearing honest, and they can work for a while. But the easiest way to appear honest

is to *be* honest. As suggested in [Chapter 2](#), you need to tell the truth and not mislead your readers. As suggested in [Chapter 4](#), you also need to be cooperative, diplomatic, and constructive. And as suggested in this chapter, you need to remember people's broader goals: to protect their own security, to achieve recognition, to learn and grow in their professional and personal lives, and to connect with others.

WRITER'S CHECKLIST

In analyzing your audience, did you consider their broader goals of

- ☐ maintaining security? ([p. 174](#))
- ☐ achieving recognition? ([p. 174](#))
- ☐ growing professionally and personally? ([p. 174](#))
- ☐ staying connected? ([p. 174](#))

In planning, did you consider the following constraints:

- ☐ ethical? ([p. 176](#))
- ☐ legal? ([p. 176](#))
- ☐ political? ([p. 176](#))
- ☐ informational? ([p. 176](#))
- ☐ personnel? ([p. 176](#))
- ☐ financial? ([p. 177](#))
- ☐ time? ([p. 177](#))
- ☐ format? ([p. 177](#))

In crafting a persuasive argument, did you

- ☐ use the three-part structure of claim, evidence, and reasoning? ([p. 177](#))
- ☐ consider opposing viewpoints? ([p. 178](#))
- ☐ choose appropriate kinds of evidence? ([p. 179](#))
- ☐ consider using graphics as persuasive elements? ([p. 182](#))
- ☐ appeal to emotions responsibly? ([p. 182](#))
- ☐ carefully consider where to present the claim? ([p. 183](#))
- ☐ consider the role of your readers' culture? ([p. 186](#))

In writing the argument, did you avoid the following logical fallacies:

- ☐ ad hominem argument? ([p. 186](#))
- ☐ argument from ignorance? ([p. 186](#))
- ☐ appeal to pity? ([p. 187](#))
- ☐ argument from authority? ([p. 187](#))
- ☐ circular argument? ([p. 187](#))
- ☐ either-or argument? ([p. 187](#))
- ☐ ad populum argument? ([p. 187](#))
- ☐ hasty generalization? ([p. 187](#))
- ☐ post hoc reasoning? ([p. 187](#))
- ☐ oversimplifying? ([p. 187](#))

In drafting your argument, did you create a persona that is

- ☐ cooperative? ([p. 188](#))
- ☐ moderate? ([p. 188](#))
- ☐ fair-minded? ([p. 188](#))
- ☐ modest? ([p. 188](#))

EXERCISES

For more about memos, see Ch. 14, p. 376.

1. Visit the website of a car manufacturer, such as Ford (www.ford.com) or Mercedes-Benz (www.mbusa.com). Identify the major techniques of persuasion used in the words and graphics on the site. For example, what claims are made? What types of evidence are used? Is the reasoning sound?
2. Victory Air has been criticized in the press because of its policy of charging an overweight passenger for a second seat if he or she cannot fit in a single coach seat without his or her body crossing the armrest boundary. In a public letter printed on its website, Victory used the following evidence as part of its defense of its policy:
 - a. In 2003, a commuter plane crashed on takeoff from Charlotte, North Carolina, in part due to excess weight. We need to be able to require that a heavier passenger pay for and use two seats in order to keep the plane's total weight within acceptable limits for safe operation of the plane.
 - b. Our policy is not an attempt to increase revenues: if there is an available empty seat, we do not charge the heavier passenger for a second seat.
 - c. Every passenger pays more for a ticket because heavier passengers increase fuel consumption. It's only fair that heavier passengers pay extra for the increased fuel consumption.
 - d. According to a study by the National Transportation Safety Board, an overweight passenger squeezed into a single coach seat might be a safety risk to another passenger or to himself or herself if the plane must be evacuated quickly.
 - e. The average weight of a passenger climbed from 180 pounds in 1995 to 190 pounds in 2003. Estimates place the current average weight at almost 195 pounds.For each of these five items, write a brief paragraph in which you identify the nature of the evidence (if any) — numerical data, example, or expert testimony — and identify any logical fallacies. If you think the evidence is not as effective as it might be, what is the problem, and how would you make it more effective?
3. For each of the following claims, write one paragraph identifying the logical flaw:
 - a. The election couldn't have been fair — I don't know anyone who voted for the winner.
 - b. It would be wrong to prosecute Allied for age discrimination; Allied has always been a great corporate neighbor.
 - c. The decrease in smoking can be attributed to increased restrictions on smoking in public.
 - d. Bill Jensen's proposal to create an on-site day-care center is just the latest of his harebrained ideas.
 - e. Since the introduction of cola drinks at the start of the twentieth century, cancer has become the second-greatest killer in the United States. Cola drinks should be outlawed.
 - f. If mutual-fund guru Peter Lynch recommends this investment, I think we ought to buy it.
 - g. We should not go into the flash-memory market; we have always been a leading manufacturer of DRAM.
 - h. The other two hospitals in the city have implemented computerized patient record keeping; I think we need to do so, too.
 - i. Our Model X500 didn't succeed because we failed to sell a sufficient number of units.
 - j. No research has ever established that Internet businesses can earn money; they will never succeed.
4. **TEAM EXERCISE** Pair with another student for this research project on multicultural communication styles. Follow these steps:
 - a. Working by yourself, enter the name of a country and the word *business* in a search engine. For example, enter "Nicaragua business." Find the website of a business in that country, and then print out the About the Company page or some similar page, such as Mission or Projects. Or enter the name of a country and the word *government*, such as "Nicaragua government." Find a government agency in that country that has published a report available on the Internet. Print several pages of the report.
 - b. On your copy of the pages you have printed, disguise the country of origin by blacking out the name of the company or government agency and any other information that would indicate the country of origin.
 - c. Exchange pages with your partner. Study your partner's pages. Do the pages show a different strategy of persuasion than you would expect from a U.S. writer? For instance, does the writer support his or

her claims with the kinds of evidence you would expect to see in the United States? Is the information organized as you would expect? Does the writer create a persona that you would expect to see?

- d. Meet with your partner and explain to him or her what you see in the pages that is similar to or different from what you would expect if the document came from the United States. Ask your partner whether he or she saw the same things. Present your findings in a memo to your instructor.

CASE 8: Analyzing the Persuasiveness of a Poster

You work in the media department of the U.S. Nuclear Regulatory Commission (U.S. NRC), and your supervisor has asked you to put together a survey to determine what employees at nuclear facilities think about the NRC's poster on Safety Culture. Before you can draft a questionnaire, you must analyze the education and outreach pages on the NRC's website and then think about effective means of persuasion that might improve the poster. To get started on your assignment, go to LaunchPad.



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